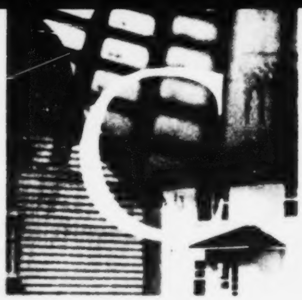
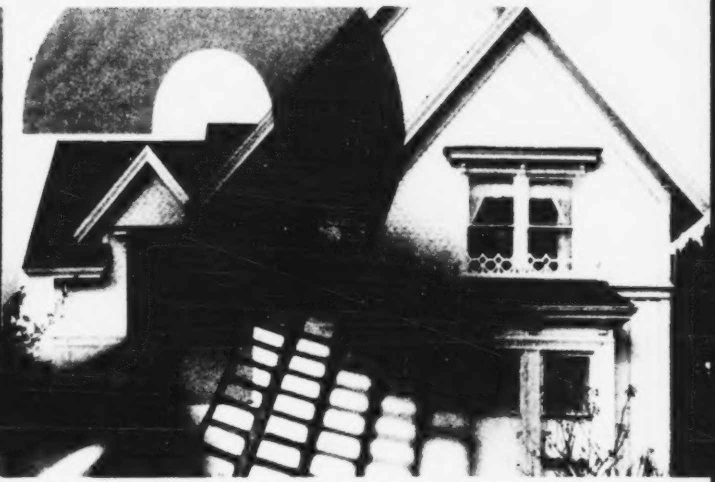


CURRENT HOUSING RESEARCH

VOLUME 9, NUMBER 2

WINTER 2002

SOCIAL, ECONOMIC AND TECHNICAL RESEARCH



CMHC SCHL

HOME TO CANADIANS
Canada

CURRENT HOUSING RESEARCH

Volume 9
Number 2
Winter 2002

Issued also in French under the title: ***Recherches courantes sur l'habitation***

Publié aussi en français sous le titre: ***Recherches courantes sur l'habitation***

CURRENT HOUSING RESEARCH ORDER FORM

If you wish to receive any of the completed reports or bibliographies listed, or if you would like to be on the mailing list to receive *Current Housing Research*, please fill out this form and send it to:

103-01545

Canadian Housing Information Centre
Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa ON K1A 0P7
Fax (613) 748-4069
Telephone 1-800-668-2642
Email: chic@cmhc-schl.gc.ca

COMPLETED REPORTS REQUESTED

BIBLIOGRAPHIES REQUESTED

☐ Send copies of above reports/bibliographies

☐ Add my name to your mailing list to receive *Current Housing Research*

Name		
Mailing Address		
City	Province	Postal Code

INTRODUCTION

Welcome to "*Current Housing Research*". This publication merges "*Housing Research Quarterly*" and "*Current Housing Technology Initiatives*" and continues the numbering of the "*Housing Research Quarterly*".

Under Part IX of the National Housing Act the Government of Canada provides funds to Canada Mortgage and Housing Corporation to conduct research into the social, economic and technical aspects of housing and related fields.

Current Housing Research is compiled and produced three times a year by the Canadian Housing Information Centre. This publication provides information and access to research which is undertaken and sponsored by the Corporation. It is also available on CMHC's Website at chic@cmhc-schl.gc.ca

The publication contains information on completed research reports, new publications, videos and bibliographies, as well as planned and ongoing research projects. An alphabetical title index of items listed is included at the end for quick reference.

The overall arrangement of "*Current Housing Research*" is by broad subject category. Within each subject category, lists of planned and ongoing projects and completed research reports are described.

Each entry can contain the following elements:

- The project or report title;
- A description of the project or report results;
- The CMHC Project Officer who is managing the project;
- The Division within CMHC which is responsible for the project;
- For External Research Projects, the grant recipient undertaking the research;
- A Contract Identification Number (CIDN);

- The Status of the project: whether the project is in a planned, ongoing or completed phase. "Planned Projects" are those that are not yet underway, but are likely to be initiated in the current year. "Ongoing Projects" refer to research projects which are currently underway. No reports are yet available. Once the project is completed, and a report is available for distribution, it will be listed as a "completed report."

- Whether the report resulting from the research project is available and the address where the completed report can be obtained.

To discuss research projects that are recent or ongoing, please call CMHC General Inquiries at (613) 748-2000 and ask for the CMHC Project Officer identified under each project description.

CMHC'S EXTERNAL RESEARCH PROGRAM

The objective of the CMHC External Research Program (ERP) is to encourage and enable researchers in the private and not-for-profit sectors to put forward and carry out relevant, innovative, and high quality housing research projects. Under the Program, financial contributions are made to support research investigations into important questions, problems, and issues affecting Canadian housing. Housing research priority areas are identified in the "External Research Program Grants for Housing Research Guidelines and Application Form".

Applicants to the External Research Program must be Canadian citizens or have permanent resident status in Canada.

Independent researchers as well as those employed in Canadian universities, institutions, private consulting firms, the professions and the housing industry may apply for these grants.

Full-time students at the graduate or undergraduate level are not eligible to apply. Students may be hired to assist in the conduct of the research, but under no circumstances may they take over responsibility for the direction of the work or the quality of the final report.

Individuals who are full-time federal, provincial or municipal government employees may apply. However, to be eligible, an applicant must provide a letter of support from her/his employer which shows that the proposed research is not part of, and will not interfere with, her/his regular work. CMHC employees are not eligible to receive grants under this Program.

CMHC is interested in receiving applications on topics related to its housing research priority areas. New ideas and innovative approaches in these areas are welcome.

To obtain the booklet outlining the priority research areas, the guidelines and application form for the External Research Program you may contact:

The Administrator
CMHC External Research Program
Research Division
Canada Mortgage and Housing Corporation
700 Montreal Road, Room C7-307
Ottawa, Ontario
K1A 0P7

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TECHNICAL RESEARCH

ABORIGINAL HOUSING: LOCAL DESIGN AND MATERIAL

This project responds to opinion that house designs found in Aboriginal communities are inappropriate and that perfectly good building materials exist on reserve but are never used. The project assumes that in fact there are a significant number of examples where appropriate designs have been put in place and where the potential use of local material has been investigated. The project will identify these examples, and document a selected number of them as case studies. The case studies will produce material suitable for dissemination.

The general approach is:
-- to build an inventory of past initiatives on increasing the Aboriginal relevance of housing design and on assessing the feasibility of using local materials;
-- to select a range of examples from the inventory for case study analysis; and
-- to draw conclusions along the lines of "lessons learned."

CMHC Project Officer : *Phil* ***Deacon***
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

DEMONSTRATION OF HEALTHY HOUSING ON RESERVE

This project is being undertaken in partnership with First Nations communities. The objectives are to support the design, construction and demonstration of five on-reserve Healthy Houses near Montreal, Belleville, Thunder Bay, Winnipeg, and on band land in N'Dilo and Dettah near Yellowknife. To date, four houses have been built and demonstrated in the following communities - Kanawake QC, Eagle Lake ON, Roseau River MB, plus several micro-sewage treatment systems in NT. Native communities own and occupy these demonstration houses, which were constructed by locally trained trades and specialists. A goal of the project was to better equip First Nations community and other decision makers, and the public to understand the importance of constructing more affordable, appropriate and environmentally sustainable housing. A CMHC report will be produced detailing house costs and benefits, designs and systems at the completion of the project. An About Your House summary has already been published which describes the Eagle Lake Healthy House and its matching "EcoNomad" utilities container. A 30 minute video has also been prepared which describes the Kanawake Healthy House and their plans to build a "sustainable subdivision" of 27-35 homes on a ten acre "ecovillage" site. The Tyendinaga Mohawks (near Belleville ON) have already built four Granny Houses and five Seniors homes which meet Healthy Housing IAQ goals (Indoor Air Quality). This community is now preparing to design and build a "sustainable subdivision" of some 36 homes. The N'Dilo and Dettah communities have installed micro-sewage systems in a number of homes, following the demonstration and testing of a prototype micro-system in a single family house. The performance of these micro-systems is now being monitored in collaboration with the NWT Housing Corporation and an evaluation report has been prepared by UMA Engineers under contract to the City of Yellowknife.

CMHC Project Officer : *Chris Ives*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

FIRST NATIONS HEALTHY HOUSING SUSTAINABLE COMMUNITY DEVELOPMENT SYMPOSIUM, AND UPDATE OF THE 'BEST PRACTICES' PUBLICATION

This project's objective is to organize and facilitate a two day First Nations Healthy Housing and Sustainable Community Development Symposium and to update the 'Best Practices' publication.

CMHC Project Officer : *Alain Croteau*	***CIDN*** : 2497 1500002
Division : Assisted Housing Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

NATIVE INSPECTION SERVICES INITIATIVE (NISI) GUIDE

Over the years, First Nations throughout Canada have become increasingly interested in being involved in inspecting renovations and new homes in their territories. To address this desire, CMHC developed the Native Inspection Services Initiative (NISI) in 1995, to provide greater First Nation involvement in inspections for CMHC programs and to help build First Nation inspection capacity. Building inspection capacity is an important step in improving First Nations' housing quality.

This Guide explains the requirements of NISI and is a reference guide to inspection for NISI inspectors and organizations. CMHC will continually update the Guide and plans to put the Guide and updates to it on the CMHC web site.

Developed by the Southern First Nations Secretariat, Ontario. CMHC Project Officer: Alain Croteau. Ottawa: Canada Mortgage and Housing Corporation, 2001. 90 pages

NOTE : Aussi disponible en français sous le titre : Guide sur l'initiative des services d'inspection autochtones (ISIA)

STATUS : Completed Report

AVAILABILITY : On a loan basis from the Canadian Housing Information Centre

SEABIRD FIRST NATIONS FLEX/HEALTHY HOUSING DEMONSTRATION

The Seabirds Island demonstration project will provide a full scale prototype of Flexhouse/Healthy house models and will apply principles of sustainability and integrated design to the design and decision process. The project will be open for public demonstration for two years and will provide a model for application in remote First Nation communities. The contractor will conduct architectural design consulting to design, build and commission seven houses that are affordable, easy to build, easy to change, easy to maintain and inexpensive to operate.

CMHC Project Officer : *Allan Dobie*	***CIDN*** : 2663 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

ABORIGINAL HOUSING

SUSTAINABLE COMMUNITY SITE PLAN, INFRASTRUCTURE PLAN AND HEALTHY HOUSE DESIGNS

The objective of this project is to develop a sustainable community site plan, infrastructure plan and healthy house designs for approximately thirty homes in cooperation with the community of Tyendinaga. The intention of this project is to demonstrate that when alternative infrastructure options, land use patterns and high performance homes are explored simultaneously as an integrated design solution that improvements can be made in all these categories without an overall price increase. The integrated participatory design process will include community workshops involving both the immediate community as well as the broader Ontario First Nations community and design professionals. The results of the workshops and the resulting community and house designs will be published in a report and the first healthy high performance home will be available for public viewing for a period of one year.

CMHC Project Officer : *Douglas B Pollard*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2408 0200001
STATUS : Ongoing

ACOUSTICS

NOISE ISOLATION PROVIDED BY GYPSUM BOARD PARTITIONS

The objective of this project was to analyze the results of 350 sound transmission tests conducted on gypsum board partitions of various compositions. The results of these tests were published in report no. 761 produced by the Institute for Research in Construction of the National Research Council of Canada. This report conveys the conclusions of the analysis; it highlights the main factors influencing the performance of gypsum board partitions: the gypsum boards themselves, the studs and stud arrangements, the resilient furrings, and the sound absorptive materials inserted in the cavity.

Prepared by MJM Acoustical Consultants Inc. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Jacques Rousseau. Ottawa: CMHC, 2002. 169 pages

NOTE 1 : Aussi disponible en français sous le titre : Isolation phonique procurée par les plaques de plâtres

NOTE 2: No. 02-108 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

ACOUSTICS

QUALIFICATION OF THE DEGREE OF ACOUSTIC COMFORT PROCURED BY MULTI-FAMILY BUILDINGS - PHASE II

This project's objective is to improve the quality of buildings and, consequently, the quality of life of the people who live in them. The development of realistic acoustic insulation objectives based on previously acquired knowledge and a rigorous method to evaluate and control the acoustic quality of multi-family buildings is the best way to ensure that the knowledge of acoustic insulation in multi-family buildings will be used to make better buildings in the future.

CMHC Project Officer : *Jacques F Rousseau*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201016
STATUS : Ongoing
NEW

BASEMENTS, FOUNDATIONS & CRAWLSPACES

COMPREHENSIVE STUDY ON SLAB-ON-GRADE FOUNDATIONS

The purpose of this project is to investigate and provide answers to technical questions on slab-on-grade foundations. This includes slab insulation, slab moisture protection, the selection of appropriate heating systems, and slab-on-grade cost effectiveness in various climate regions of Canada. Other aspects to be studied will be consumer acceptance of this type of "basementless" house, alternate layout designs to accommodate storage, and overall pros and cons of the alternative house foundation type. A consultant is expected to start this project this fall.

CMHC Project Officer : *Ken Ruest*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2275 0200
STATUS : Planned

INSULATED CONCRETE FORMS TRAINING PROGRAM

This was a multi-partnered project led and managed by the Cement Association of Canada (CAC). Participants include the Portland Cement Association (PCA), Insulating Concrete Form Association (ICFA), National Energy Conservation Association (NECA), Alliance of Canadian Building Officials Association (ACBOA), Association of Canadian Community Colleges (ACCC), Seneca College, Southern Alberta Institute of Technology (SAIT), Atlantic Home Builders' Training Board (AHBTB), Canadian Carpentry Union, CHBA, NRCan and CMHC. The purpose of this project was to develop and pilot a course curriculum and course training materials on how to properly construct insulated form foundation and building systems (ICFs). The course consists of two modules; Introduction to Insulated Concrete Form Construction, and Fundamentals of Concrete Footings and Foundations. It will be promoted to ICF installers, home builders, home inspectors, building officials, and the trades involved in the installation of ICFs. The course material was developed and piloted in two phases over a two year period from 2000 to 2002. The implementation of the training program into various educational institutions across the country will occur in 2002-2003. Discussions with educational institutions are currently underway. For more information on this training program, contact the Cement Association of Canada

STATUS : Completed
AVAILABILITY : Cement Association of Canada

BASEMENTS, FOUNDATIONS & CRAWLSPACES

PRACTICAL MEASURES FOR THE PREVENTION OF BASEMENT FLOODING DUE TO MUNICIPAL SEWER SURCHARGE

This External Research Program (ERP) project is reviewing practical measures currently available to homeowners experiencing basement flooding due to sewer surcharges. The research included a survey of municipalities to discover how commonly this type of flooding occurs. The consultants will also analyze existing devices or measures to prevent sewer surcharge, and will draft advice for householders and builders on the more successful solutions identified.

CMHC Project Officer : *Don Fugler* **CIDN** : 2437 0200010
Division : External Research Program **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

BUILDING CODES

DEVELOPMENT OF TRANSITION TRAINING FOR OBJECTIVE-BASED CODES

Under the auspices of the Canadian Commission on Building and Fire Codes (CCBFC), CMHC is contributing to a partnership of National Building Code stakeholders to develop transitional training material for the objective-based codes which will include pilot testing. Content will provide for training on the structure and new information to be included in the 2004 objective-based code, on the evaluation of alternative solutions to be allowed under objective-based codes (e.g., using sprinklers in lieu of fire separations), on assessment criteria to allow for transferability of alternatives and their impact on other code requirements, on preparation of knowledge tests, on development of an instructor's guide, and on pilot testing. As provincial, territorial and municipal code enforcement officials have the most comprehensive information requirements, material will be developed at their level and then adapted for other stakeholder groups to meet their needs. This project will develop according to the following schedule: Year 2002 - Training needs assessment, Year 2003 - Development of training material, Year 2004 - Pilot-test and finalize training material. The training needs assessment phase will commence this Fall and be completed early in 2003.

CMHC Project Officer : *Darrel Smith* **CIDN** : 2700 0200001
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Seminar/training is not yet available

BUILDING MATERIALS

CEMENT SKIN EPS CORE BUILDING SYSTEM: PROOF OF CONCEPT TESTING - PRELIMINARY STRUCTURAL EVALUATION

This research was carried out on a cementitious-skin structural sandwich wall having a core of expanded polystyrene (EPS). As a simple site-built assembly, the method was initially intended for low cost owner-build applications. It can be used to construct high performance building envelopes that can be built quickly, with low-skilled labour, at low cost and with materials that are readily available. The proponents, Brad Robinson and Emmanuel Blain-Cosgrove, developed the system with the challenges of sustainable building in mind: affordability, energy efficiency, minimal environmental impact materials, and occupant health. It is composed of an expanded polystyrene (EPS) panel core, wrapped in polymer mesh and covered with stucco on both sides. The result is a highly resource and energy efficient building envelope system.

The project's objective was to undertake a 'proof of concept testing' of the wall system to verify its structural capacity and to determine if it is suitable and safe for use in ancillary and residential buildings. Research was conducted by Prof. Yixin Shao from the Civil Engineering Dept. at McGill University. Among the proof of concept tests were compressive, shear and flexural performances of samples and a full-scale wall. Freeze-thaw (durability) and blow-torch tests were also carried out. From the results, it could be concluded that the EPS sandwich is strong enough to serve as a load bearing exterior wall for one-storey residential housing, even by minimizing materiels. Further work on the system could look at methods to improve fire safety and the effect of water saturation, as proposed by R.E. Platts in his appended independent review of the research.

Presented by Emmanuel Blain-Cosgrove. CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2001. (External Research Program Research Report) 52 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

COMPOSITE MASONRY WALL TIES: FINAL REPORT

This project aimed at developing a prototype masonry tie using composite materials, which would fulfill structural requirements, be immune to corrosion and manufactured at a lesser cost. The project originated from the fact that current galvanized masonry ties do not meet new standards. The alternative, stainless steel ties are 80% to 100% more expensive.

Several prototypes were developed and tested, concluding that an adjustable tie can be manufactured from glass fibre reinforced polymer composite (GFRPC). Specifically, the most promising tie would be used between masonry veneer and a concrete block backup wall system with 50 mm air space and 50 mm rigid insulation. The investigator made prototypes that meet current standards and show promise that they could be manufactured competitively.

Prepared by Vera Straka, Dept. of Architectural Science, Ryerson University. CMHC Project Officer: Luis de Miguel. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) 51 pages

NOTE: No. 02-109 in the Research Highlights Technical Series summarizes the results of the research and is available on the CMHC web site

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

MATERIAL PROPERTIES OF STRAW LIGHT CLAY INFILL SYSTEMS

This ERP project will establish the material composition and properties of an alternative building product, Straw Light Clay (SLC) infill systems. Laboratory testing will demonstrate its suitability for use in Canadian climates.

CMHC Project Officer : *Don Fugler*	***CIDN*** : 2525 0201011
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

SEISMIC PERFORMANCE OF RAINSCREEN STUCCO

As an integral phase of a larger 'Earthquake 99 Project' (a project to develop practical cost-effective methods to substantially reduce heavy earthquake damage to residential wood frame construction) Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and British Columbia Housing Management Commission contracted with the University of British Columbia and TBG Seismic Consultants to research the seismic performance of rainscreen stucco exterior cladding systems for residential wood frame construction in BC. The primary objective of this research is a comparative earthquake performance evaluation of rainscreen and non-rainscreen stucco systems. The secondary research objective is the development of refinements to the design of rainscreen stucco systems to improve performance when subjected to seismic loading. This comprehensive study includes an extensive test series to determine the strength of different stucco types, static cyclic tests of single wall specimens, the analytical modeling of wall systems with stucco, and the dynamic testing of a full-scale house incorporating a stucco wall system. The completion of this project is expected by end of fall 2002.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2480 0200001
STATUS : Ongoing
NEW

TESTING OF AIR BARRIER MEMBRANES IN WALL ASSEMBLIES

Design and conduct a testing program to ascertain the performance and risk of air barrier materials and assemblies using recent construction materials in actual assemblies. Specifically, the purpose of the research project is to determine the effect that exposure to sustained environmental conditions, wetting of the substrate, and material compatability has upon the adhesion strength between air barrier materials and substrates.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2535 0200002
STATUS : Ongoing
NEW

CONCRETE

BEST PRACTICE GUIDE FOR PRE-CAST CONCRETE WALLS

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to precast wall panels in residential applications. Precast is a well developed system in commercial applications but it requires special treatment when used in housing. The project will be conducted in partnership with the Canadian Precast and Prestressed Concrete Institute, installers and their associations. This Guide will be produced as a joint publication through a collaborative project with Public Works Government Services Canada. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to precast walls, construction details in AutoCAD format, outline specifications and additional sources of information and references.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2215 0200001
STATUS : Ongoing

CONCRETE

STANDARDIZATION OF CONCRETE REPAIR PROTOCOLS

This study was initiated to address concerns raised at a round-table discussion convened by Canada Mortgage and Housing Corporation to discuss concrete deterioration and repair issues for buildings. It was generally agreed that there is no consistent approach to concrete investigations and repairs and that the development of an assessment and repair protocol would be beneficial. In achieving a concrete repair protocol, the first step is to identify the state-of-the-art and the current practice for investigation, repair and monitoring strategies. State-of-the-Art is considered to be the highest level of technology in the field at this time and Current Practice is considered to be the procedures that are in general or prevalent use by most consultants. This project will research current assessment, monitoring and repair strategies for concrete repair employed by engineering consulting firms commonly involved in concrete investigation and restoration projects . Existing protocols commonly used in the field as well as existing protocol guidelines assembled by various agencies (e.g. CSA) will be catalogued. This project is expected to be completed by end of fall 2002.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1890 0200002
STATUS : Ongoing

CONTAMINATED LANDS

INVESTIGATION OF ACCELERATED DOMESTIC OIL TANK CORROSION

The vast majority of homes in Atlantic Canada use oil-burning equipment for home heating and generate hot water for domestic and heating purposes. Oil is stored in tanks, either outside or inside the house and each year, millions of dollars are spent in cleaning up spills from leaks associated with these oil storage tanks. Some tanks have been known to last 30 years in service without leaks; others failing within a few years of service. The research project will investigate the extent and causes of the corrosive elements and suggest ways to prevent corrosion of the tanks. The project will examine the extent of interior corrosion of domestic oil tanks that have been in operation for various periods of time. In particular the study will build upon research carried out under a previous CMHC grant, wherein it was found that water/chloride contamination appeared to be the cause of tank corrosion. The project is expected to be completed in the spring of 2003.

CMHC Project Officer : *Silvio Plescia*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201010
STATUS : Ongoing
NEW

DOORS AND WINDOWS

LEAK-PROOFING WINDOWS, PHASE 1 - FABRICATION, INSTALLATION AND MAINTENANCE

Recent CMHC surveys including "The Survey of Building Envelope Failures in the Coastal Climate of British Columbia" and "Wall Moisture Problems in Alberta Dwellings" revealed that exterior moisture penetration through and/or around windows (at window wall interfaces) is a significant contributor to the envelope moisture problem. The objective of this project is to undertake a study which identifies the nature and causes of moisture ingress problems associated with windows

DOORS AND WINDOWS

and window to wall interfaces. The study will answer four key questions: 1. What are the important leakage paths associated with windows? 2. What are the primary causes of these leakage paths? 3. What are the key improvements that need to be made to address these leakage paths and causal factors? and 4. What industry sector can best address these improvements? This project, funded by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and British Columbia Housing Management Commission, is expected to be completed by mid-fall 2002.

CMHC Project Officer : *Silvio Plescia* **CIDN** : 2285 0200001
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

LEAK-PROOFING WINDOWS, PHASE II - A REVIEW OF STANDARDS TESTING AND CERTIFICATION

Recent CMHC surveys including "The Survey of Building Envelope Failures in the Coastal Climate of British Columbia" and "Wall Moisture Problems in Alberta Dwellings" revealed that exterior moisture penetration through and/or around windows (at window wall interfaces) is a significant contributor to the envelope moisture problem. The objective of this research project, funded by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office and the British Columbia Housing Management Commission, will be to conduct a detailed review of the Canadian Window Standard CSA A440, together with all its attachments, to review the test requirements related to moisture penetration as outlined in the standards, and to review, assess and evaluate the window certification programs and processes. This research project will identify recommended solutions and opportunities for alleviating these moisture problems into the wall assembly from the window/wall interface. This study will complement a companion study "Leakproofing Windows, Phase I - Fabrication, Installation and Maintenance" in which the primary window leakage paths and causal factors are identified from insitu window-wall performance records.

The CSA A440 Window Standards Committee is considering the adoption of and harmonizing with the North American Fenestration Standards (NAFS). This project will also attempt to consolidate the potential impact that NAFS may have on the performance of windows if adopted by the window standards committee.

This work is underway and is anticipated to be completed by the end of 2002.

CMHC Project Officer : *Silvio Plescia* **CIDN** : 2425 0200001
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

ENERGY CONSERVATION

ALTERNATIVE HOME ENERGY SOURCES FOR THE NORTH

This was a partnership project between Alaska Housing Finance Corporation, Arctic Energy Alliance and CMHC. Access to alternative energy in the North was an important issue identified in the 1998 Client Consultation ("What We Heard - in the North") . While much literature exists on alternative home energy sources, most of it is too complex for general comprehension. Further much of this information has not been verified for applicability to the North, including availability and performance of alternative energy products in the North. This project provides a full summation of options, a cost benefit analysis based upon present individual utility infrastructures and costs, as well as regional climatic requirements, references, and contact information. This study consists of four parts:

1. a comprehensive section on how to best achieve optimal energy conservation within a home;
2. an overview of all home utility sources which access renewable energy sources;
3. community-specific spreadsheets containing all climatic information; and
4. spreadsheets to calculate community-specific cost-benefit analysis of any alternative home energy system specific to the climatic and utility cost data for a given locale.

This database will be periodically updated to gather accurate climatic data and to keep pace with evolving technologies to ensure accuracy in cost benefit calculations.

CMHC Project Officer : *Aleta Fowler* — ***CIDN*** : 2312 0200002
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ANALYSIS OF THE IMPACT OF ENERGY EFFICIENCY MEASURES IN MULTI-UNIT RESIDENTIAL BUILDINGS

An energy and greenhouse gas emission simulator will be developed to model the impacts of energy efficiency measures on large buildings. The energy simulator will be capable of analyzing the impact of individual, or packages of, energy efficiency measures on the energy consumption and green house gas emissions of large commercial and multi-unit residential buildings. Regional and national energy and green house gas emission reductions will be assessed by using the simulator to evaluate the impact of energy efficiency measures on the buildings in a representative building database. The results of the analysis will then be projected to national levels to determine the extent of retrofit measures that are required within the building stock to meet the reduction targets set by the Kyoto Protocol in December 1997.

CMHC Project Officer : *Duncan Hill* — ***CIDN*** : 2249 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CASE STUDIES OF MAJOR HOME ENERGY RETROFITS

To meet targets for greenhouse gas production in Canada, the residential sector will have to significantly reduce energy consumption in existing houses. A 1995 CMHC report suggested that houses built prior to 1989 will have to reduce energy consumption on average by about 40%. This is a big reduction, one that is rarely realized in programs funded by government or the utilities. The object of this research is to see whether relatively normal houses can have their total energy usage reduced by 40%. Saskatchewan Research Council has been hired to determine this. Five houses have been selected and the retrofits contracted by the owner were completed by December 2001. Monitoring through 2002 should establish whether the 40 % goal can be achieved.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 2349 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CHARACTERIZATION OF ENERGY AND WATER END-USE LOAD PROFILES IN HOUSING: LITERATURE REVIEW

CMHC, in cooperation with Natural Resources Canada, conducted a literature review of energy and water end-use load profiles, interior heat gain, monitoring and analysis methodologies in residential buildings. The project identified what data is available on energy and water end uses, research projects, data, monitoring protocols and published information relating to energy and water load profiles of housing. The study concluded that consistent, accurate and detailed load profiling data is not available for all end-uses in dwellings, particularly multi-unit residential buildings. CMHC and NRCan plan to develop a load monitoring protocol that will be used to gather data in both single family and multi-unit residential buildings in consistent and systematic manner. Upon completion of the protocol, load monitoring projects will be conducted in dwellings across Canada.

CMHC Project Officer : *Duncan Hill*
CIDN : 2201 0200002
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ENERGY EFFICIENCY CASE STUDIES OF MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC is in the process of documenting the application of energy efficiency measures in multi-unit residential buildings to be used as case studies. A trial case study of a housing co-operative in Ottawa is underway, to not only assess the strengths and weaknesses of the energy efficiency measures implemented, but also to identify what information can be disseminated to others in the building industry. Upon completion of this first case study, CMHC will be soliciting the housing industry for additional energy efficiency case studies. A compendium of case studies will be made available from CMHC. The case studies will also support the Energy Efficiency Opportunities Manual for Multi-Unit Residential Buildings that CMHC is in the process of developing. The case studies currently underway include:

1. Conservation Co-op, Ottawa
2. Dual Fuel Heating System, Oshawa
3. Energy Efficiency Retrofit of an Apartment Building, Toronto
4. Case Studies of Interior Insulation Retrofits in Buildings with Solid Masonry Walls (CMHC "A" Building, Ottawa; Lofts Corticelli, Montréal; Karcher Building, Prince Albert)
5. The Complete Rehabilitation of the Broadview Apartment building.

CMHC Project Officer : *Duncan Hill*
CIDN : 1899 0200002-3
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ENERGY EFFICIENCY OPPORTUNITIES MANUAL FOR MULTI-UNIT RESIDENTIAL BUILDINGS

CMHC, in partnership with the Ontario Ministry of Municipal Affairs and Housing (OMMAH), has developed a manual that details energy and water efficiency measures for existing multi-unit residential buildings. The document is based on a manual originally developed by the Ontario Ministry of Housing in the early 1980's. The new manual offers proven, current energy efficiency measures for the building envelope, mechanical, electrical, and domestic hot water heating systems. A web-based version of the manual has been developed that has been installed on the CMHC web-site. Individual energy and water efficiency measures have been placed on the high-rise website as they are developed. The measures have been publicized as the energy and water efficiency "Tip of the Week" (http://www.cmhc-schl.gc.ca/en/imquaf/himu/wacon/waensatip/index.cfm). The production of the web-based, and translated, version has also allowed for a simultaneous final editing of the manual in preparation for publication.

CMHC Project Officer : *Duncan Hill*
CIDN : 1887 0200002
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ENERGY USE OF STRAW BALE BUILDINGS WITH COMPARABLE BUILDINGS OF CONVENTIONAL CONSTRUCTION

This survey compared the measured energy consumption of straw bale buildings with similar buildings of conventional construction. The contractor examined the billing data of eleven straw bale buildings that used measurable heating energy (gas, oil, or electric). He then modelled conventional buildings of the same interior dimensions built to BC Building Code, using the HOT2000 program. The results show that nine of eleven straw houses studied use less energy than their modelled counterparts, with the average reduction in the order of 20%. These savings are substantially larger than the possible errors due to computer modelling imprecision.

CMHC Project Officer : *Don Fugler* ***CIDN*** : 2441 0200003

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

EXPERIENCE OF EARLY ADOPTORS OF SMALL SCALE, GRID-CONNECTED RENEWABLE ENERGY SOURCE POWER PRODUCTION AND NET METERING POLICIES IN CANADA

This study is to investigate and document the experience of early adopters of small-scale, renewable energy source grid-connected independent power producers (IPPs) and to compile an overview of net metering policies across Canada.

CMHC Project Officer : *Chris Ives* ***CIDN*** : 2525 0201008

Division : External Research Program ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available ***NEW***

HYGROTHERMAL MODELLING OF THE INTERIOR INSULATION RETROFIT OF A SOLID MASONRY BUILDING

In 1997, CMHC was involved in the renovation of a building with solid masonry walls. Part of the renovation involved the addition of insulation to the interior of the solid masonry walls. This retrofit technique is contentious within the construction industry as it is thought to cause wall durability problems due to freeze thaw cycles, interstitial condensation and thermally induced stresses. Monitoring of the project shows that the wall systems are thus far performing well. CMHC has engaged a consultant to use a hygrothermal modelling tool to assess the degree to which the tool can track the wall performance monitoring conducted to date and to assess the long-term performance of the retrofitted wall system. If the model can be configured to provide a reasonably accurate assessment of the heat, air and moisture regimes within the wall assembly, the project will be extended to assess the performance of the retrofit strategy under different environmental conditions.

CMHC Project Officer : *Duncan Hill* ***CIDN*** : 1730 0300005

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

OPTIMIZING HEAT AND AIR DISTRIBUTION SYSTEMS WHEN RETROFITTING HOUSES FOR ENERGY EFFICIENCY

When a house undergoes energy upgrading, either by improving the envelope or the heating appliance, one factor often overlooked is the heating or ventilating distribution system. With support from the Program for Energy Research and Development (PERD), CMHC is undertaking research into distribution system upgrades. The first stage of this work was a review of the performance characteristics of current and innovative distribution systems. The review established the operating characteristics of HVAC equipment and distribution systems, and the limitations of retrofitting existing heating systems. Three small projects evolved from the preliminary review. Contractors have been hired to look at:

- simplified furnace sizing calculations,;
- the difference in heating system installation between a city with diligent inspection and one where inspection is minimal; and
- a demonstration of how to install forced air ducting in houses with no existing air distribution systems.

Reports will be produced on these three projects during 2003.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2440 0200001
STATUS : Ongoing

RETROFITTING A CITY: A GUIDE FOR MUNICIPALITIES TO IMPLEMENT A BUILDING RETROFIT PROGRAM

The primary goal of this project was to help municipalities across North America improve energy efficiency in buildings and reduce their greenhouse gas emissions. Based on Toronto's successful Better Buildings Partnership Program the project produced this useable manual for designing and implementing municipal building retrofit programs to improve water and energy efficiency. Building retrofits can reduce greenhouse gas emissions by lowering energy consumption. Undertaken on a wide scale, retrofitting buildings can enhance the sustainability of urban centres by diminishing air pollution locally and slowing the rate of consumption of natural resources.

Building energy retrofits should follow a process which includes the following steps:
-- Audit: a study of the building and the way it uses energy which leads to a definition of appropriate measures;
-- Implement: the implementation of the measures including engineering, project management, subcontracting, and commissioning;
-- Monitor: the monitoring and tracking of energy savings to be sure they are achieved as expected, and they are sustained.

This process, and the steps on which it is based, are described in detail throughout the manual.

Designed and written by Bob Bach and Marjorie Lamb. Canada Mortgage and Housing Corporation, Enbridge Consumers Gas, and Ontario Power Generation sponsored the project. CMHC Project Officer: Brian Eames. Ottawa: CMHC, 2001. 44 pages

NOTE 1 : Aussi disponible en français sous le titre : Rattrapage éconergétique d'une ville : guide proposant aux municipalités des moyens de mettre en oeuvre un programme de rattrapage des bâtiments

NOTE 2: No. 105 in the Research Highlights Socio-economic Series summarizes the results of the research and is available on the CMHC web site

STATUS : Completed Report and Research Highlight
AVAILABILITY : Product is available on the web

ENERGY CONSERVATION

SURVEY OF MULTI-UNIT RESIDENTIAL BUILDING CHARACTERISTICS AND ENERGY USE DATA

This project involved the collection of the physical and operational characteristics of 40 multi-unit residential buildings from all regions in Canada. Energy and water consumption histories for the past 2 to 3 years have also been collected for each building. The survey portion of this work is now complete. CMHC has developed a database (HiSTAR) to store the building files and to allow for the comparison of energy and water usage given building age, size, region, fuel type and occupancy. The building files will also be used in combination with an energy simulator-green house gas estimator to estimate the impact of upgrading the stock of multi-unit residential buildings in Canada. The database will be supplemented with additional buildings that CMHC will access in the course of other research projects.

Note: No. 01-142 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site. The title is: "Analysis of the Annual Energy and Water Consumption of Apartment Buildings in the CMHC HiSTAR database".

STATUS : Completed

AVAILABILITY : Research highlight is available

FIRES & FIRE PREVENTION

CANADIAN HOUSING FIRE STATISTICS

This project's purpose is:

1. to provide Canadian statistical benchmarks for fire safety in housing, including Aboriginal housing; and
2. to provide recommendations for Canadian housing fire loss and cost data that should be collected.

CMHC Project Officer : *Mark Holzman* ***CIDN*** : 2525 0201013

Division : External Research Program ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available ***NEW***

CLEANING UP YOUR HOUSE AFTER A FIRE

After a Fire is a consumer publication being prepared to help homeowners deal with fire damage in their homes. This publication will explain the issues to be considered to restore the home and to ensure a safe, healthy environment for the occupants. It is intended to be a brief publication targeted to the consumer, but it will also be useful to fire departments, restoration contractors, and insurance companies.

CMHC Project Officer : *Ken Ruest* ***CIDN*** : 2298 0200001

Division : Policy and Research Division ***STATUS*** : Ongoing

AVAILABILITY : Product is not yet available

FIRES & FIRE PREVENTION

INVESTIGATION OF SMOKE CONTROL IN HIGH-RISES BY POSITIVE PRESSURE VENTILATION

A research project has been initiated to study the use of positive pressure ventilation (PPV) systems to contain and expel smoke from high-rise buildings during a fire emergency. PPV systems have been used in the U.S. in low-rise buildings. The system consists of a portable, high velocity fan which is used by the fire department to clear smoke from buildings in order to facilitate access to the fire and to aid in occupant evacuation. Preliminary studies have been conducted in multi-unit residential buildings but not in cold climates where stack effect may continue to dominate smoke movement. The research program is the result of a joint venture between CMHC, the City of Ottawa Fire Department and the Fire Laboratory of the Institute for Research in Construction of NRC. The ability of PPV to contain and clear smoke from exitways in high-rise buildings has been evaluated at the Fire Laboratory's full scale test building under both summer and winter conditions. Field testing of the ability of PPV systems to pressurize stairwells in high-rise buildings has also been performed. PPV may offer Fire Departments an effective, lower cost, life and property saving tool.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 1983 0200002
STATUS : Ongoing

HEATING AND VENTILATION

ANALYTICAL MODEL OF EARTH TUBE VENTILATION SYSTEMS

The objectives of this project are to determine the conditions under which exterior ground-buried ducts (earth tubes) can be used effectively under Canadian conditions, to determine heat and moisture gains and losses for these systems under Canadian conditions, to determine the potential contribution to improvement of energy and ventilation performance of Canadian housing; and to develop guidelines for builders regarding the application of these systems.

CMHC Project Officer : *Chris Ives*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200023
STATUS : Ongoing

ASSESSING THE PARAMETERS FOR VENTILATION SYSTEMS IN MULTI-UNIT RESIDENTIAL BUILDINGS

This research project will determine the ventilation requirements for apartments. Equipment and systems will be evaluated in their ability to meet such requirements in the context of building design, occupancy type and recent experiences in the application of ventilation systems in multi-unit residential buildings. Design and installation recommendations will be created for use by building designers. Technology gaps (e.g.; the absence of appropriate equipment) will also be identified for the benefit of future research and development efforts.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200001
STATUS : Ongoing

CAN/CSA F326-M91 (R1998), RESIDENTIAL MECHANICAL VENTILATION SYSTEMS

CMHC has been supporting the revision of Can/CSA F326-M91 (1998), Residential Mechanical Ventilation Systems, with a financial contribution to the Canadian Standards Association (CSA) to act as secretariat and through CMHC participation in the task group work of the Committee. There are some significant changes to be made to the standard. Some of the tasks may require help from outside consultants. The majority of the technical review should be complete by late 2002.

CMHC Project Officer : *Don Fugler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2062 0200002
STATUS : Ongoing

CHARACTERIZATION OF AIR LEAKAGE, PRESSURE REGIMES AND RESULTANT AIR MOVEMENT IN HIGH-RISE RESIDENTIAL BUILDINGS

The objective of this project is to undertake a field investigation of the ventilation and infiltration in a residential high-rise building. CMHC, in cooperation with the Institute of Research in Construction, will monitor indoor-outdoor air pressure regimes in a high-rise for a period of one year. Ventilation system performance will also be assessed. Pressure regime measurements, in conjunction with measured air leakage characteristics of selected assemblies, will be used to estimate real-time air movement across the building envelope. This information will add to the body of knowledge governing infiltration-ventilation regimes and resultant heat load calculations in buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 1934 0200005
STATUS : Ongoing

CHARACTERIZE THE PERFORMANCE OF A WATER LOOP HEAT PUMP SYSTEM IN A MULTI-UNIT RESIDENTIAL BUILDING

Two pipe water loop heat pump systems represent an innovative approach to heating and cooling multi-unit residential buildings. The system consists of a central water distribution system that distributes moderately warm water to each apartment in the winter and cool water in the summer. An in-suite heat pump fan coil unit is then used to heat or cool the apartment depending on the season using the central water loop as a heat source or a heat dump. In theory, the system will allow for simultaneous heating and cooling of different areas of the building by redistributing heat to where it is needed. This ability is thought to offer significant energy savings but the extent to which this may be the case has not been evaluated. CMHC is undertaking a project to characterize the performance of a water loop heat pump system in a multi-unit residential building in Ottawa so that the potential for energy savings can be assessed. The project will evaluate energy consumption and operational and maintenance issues over a one year period.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 1699 0200007
STATUS : Ongoing
NEW

COMPLIANCE OF VENTILATION SYSTEMS INSTALLED TO MEET THE JUNE 18, 2001 DRAFT OF SECTION 9.32 "VENTILATION" FOR THE NBCC: FINAL REPORT

A 1999 study on compliance of new residential ventilation systems found that few, if any ventilation systems were in full compliance with the Section 9.32 "Ventilation" in the 1995 National Building Code of Canada (NBCC). Of particular concern was the fact that Sub-section 9.32.3.8 "Protection Against Depressurization" appeared to permit levels of house depressurization which are not permitted for B-vented gas appliances under the B-149 gas code. The majority of study houses were within the depressurization limits defined in 9.32 but few would comply with the depressurization limit in B149. To address this issue, the Task Group reviewing Mechanical Ventilation for Houses for the NBCC Standing Committee on Houses has drafted proposed changes to the 1995 NBCC requirements for residential ventilation systems. These proposed changes are referred to as the June 18, 2001 Draft of Section 9.32.

UNIES Ltd. was contracted by CMHC to arrange for, inspect and test ventilation systems in ten houses with ventilation systems designed and installed by a heating contractor with the intent of meeting the June 18, 2001 Draft of Section 9.32. In September 2001, meetings were held with residential heating contractors in Winnipeg and Calgary to review the requirements in the June 18, 2001 Draft of Section 9.32 to provide them with background information on this project, and to encourage their participation in this project.

In December 2001 and January 2002, ventilation systems designed and installed to meet the June 18, 2001 Draft of Section 9.32 were inspected and tested. In all, five houses in Manitoba and five houses in southern Alberta were tested. This report provides a commentary on the differences between the 1995 NBCC Section 9.32 "Ventilation", response of installers to the proposed changes, a description and assessment of the ventilation systems installed to meet the June 18, 2001 Draft of Section 9.32 "Ventilation", and commentary as to how the ventilation systems installed comply with the 1995 NBCC Section 9.32.

Prepared by Bert Phillips, UNIES Ltd. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2002. 32 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

CONSERVATION CO-OP CORRIDOR OVERHEATING REMEDIATION STUDY

The Conservation Co-op is an innovative multi-unit residential building that has adopted many advanced, or green, building practices in the design, construction and operation of the building. One of the features of the building is the use of passive cooling and solar shading to maintain comfortable summertime conditions in the building. Unfortunately, hot and humid conditions in the summer creates highly uncomfortable temperatures in the corridors and apartments of the building. Preliminary indications are that the heat recovery ventilation system for the building does not adequately ventilate the common spaces and may even contribute to overheating by delivering hot humid outdoor air to the building. A project has been launched to assess the ability of a temperature and humidity controlled auxiliary cross ventilation system in the corridors to improve conditions. Similarly, the rooftop HRV systems that supply air to the corridors and apartments will be investigated to determine if the supply air function can be deactivated when outdoor air conditions are too hot and humid and activated to take advantage of cooler outdoor conditions. The project will aid in the assessment of strategies to use night-time cooling to help maintain improved indoor conditions in multi-unit residential buildings without mechanical air-conditioning equipment.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200004
STATUS : Ongoing
NEW

ELECTRIC BASEBOARD RETROFIT IN MULTI-FAMILY BUILDINGS

During the 1960's and 1970's, electric baseboard heating systems were a common space heating approach in multi-unit residential buildings due to low installation costs, minimal use of interior space and the relatively low price of electricity. As a result, approximately 50% of apartment buildings in Canada have electric baseboard heating. However, rapidly increasing costs of electricity, concerns over environmental damage associated with conventional generating stations and the very age of most electric baseboards in apartment buildings will necessitate the development of alternative space heating strategies. This project will investigate the feasibility of replacing the existing baseboard heaters with a fan-assisted hydronic baseboard of approximately the same size and shape or alternatively, radiant panels. It is envisioned that such a system would be less intrusive and would permit the use of a water-to-water, heat pump, which itself is smaller in dimensions and lower cost than the more common water-to-air heat pump.

CMHC Project Officer : *Duncan Hill*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201009
STATUS : Ongoing
NEW

EVALUATION OF AN APARTMENT HEAT RECOVERY VENTILATION SYSTEM

An innovative heat recovery ventilation system has been developed and installed in an apartment building. The system is based on the use of low wattage fans, heat recovery and a simple air distribution system to meet the ventilation needs of individual apartments. The system will be evaluated in terms of airflow, noise, occupant perceptions of indoor air quality, and operation and maintenance requirements. This project will help to identify better approaches to ventilating multi-unit residential buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2271 0200002
STATUS : Ongoing

IDENTIFICATION OF FUTURE OPTIONS FOR THE LEBRETON FLATS DISTRICT HEATING SYSTEM

In the early 1980's, a district heating system was installed in the Lebreton Flats area of Ottawa, as a part of the redevelopment of the former industrial land to high density residential use. The system was installed to demonstrate a European style, low temperature district heating system within the context of a North American housing development. Having operated in a cost-effective and reliable manner for the past 20 years, CMHC has initiated a project to investigate future options for the system that would be in keeping with the concerns and priorities of the system's clients and CMHC.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2511 0200003
STATUS : Ongoing
NEW

NORTHERN HEATING AND VENTILATION SYSTEMS

This is a continuation of related CMHC research which is of particular need to the North. Adequate, appropriate and affordable means of ventilation and verification of manufacturers'claims need to be assessed using established CMHC methodology. Results will be critical in alleviating costly health and building damage due to lack of confirmed ventilation options. The report will be completed in 2002.

CMHC Project Officer : *Aleta Fowler*

CIDN : 2420 0200001

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

PERFORMANCE ASSESSMENT OF THE LEBRETON FLATS DISTRICT HEATING SYSTEM, OTTAWA, ONTARIO, CANADA

The Lebreton Flats district heating system, installed 20 years ago, is one of few examples of low temperature district heating systems in North America. The availability of fuel consumption and maintenance records for the system allowed for an assessment of the performance of the system over the last 20 years. The assessment found that the plant provides space heating and hot water at a cost competitive with individual building systems but without the requisite building space. The distribution system was considered to be in good condition, as minimal heat losses were noted. It was also determined that other heating options, such as conversion to individual boiler systems, would not be competitive with the existing system. This study demonstrates that over the long term, low temperature district heating systems can be attractive alternatives to conventional space and domestic hot water heating systems.

Prepared by C.W. Snoek, Department of Natural Resources Canada, CANMET Energy Technology Centre, Community Energy Systems Group. CMHC Project Officer: Duncan Hill. Ottawa: Canada Mortgage and Housing Corporation, 2001. 127 pages

NOTE: No. 02-127 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre

POSITIVE PRESSURE VENTILATION FOR HIGH-RISE BUILDINGS

Positive pressure ventilation (PPV) is achieved by placing fans outside a building and blowing air into the structure. When appropriate openings or vents are used in the structure, the airflow produced by the fan exhausts contaminants to the outside. Fire departments have used PPV as a means to ventilate contaminated atmospheres after initial knockdown and extinguishment of a fire. In Ontario, the use of positive pressure ventilation is still relatively new. However, its use as a tool to improve conditions is being explored by a number of fire departments, including the Ottawa Fire Department.

In 1998, a joint project with Canada Mortgage and Housing Corporation, Ottawa Fire Department, Tempest Technology Corporation, the Co-operators Insurance and National Research Council Canada (NRC), was initiated to investigate the use of PPV to vent smoke from high-rise buildings. NRC's ten storey facility was used for the investigations.

In the initial phase of the project, baseline tests were conducted to determine the airflow through an open exterior stair shaft door and pressures in the stair shaft produced by the fans under non-fire conditions. A second series of baseline tests were conducted using propane burners to simulate conditions (temperature and CO2 concentrations) produced by a fire. These tests were used to investigate the effect of various parameters, including vent area on the effectiveness of the PPV system. Subsequently, the PPV system was used to vent smoke produced by fires involving typical residential furniture (sofas and beds). In addition, a limited number of tests were conducted with sprinklered heptane pan fires to investigate the effectiveness of the system in venting cool smoke.

PPV system operations simulated included post-fire venting of a stair shaft and venting of a corridor on the fire floor during fire attack. Tests with the residential furniture were conducted under both summer and winter conditions to determine the effects of ambient temperature. The results of the test program are summarized in this report.

Prepared by G.D. Lougheed, P.J. McBride and D.W. Carpenter. Ottawa: Institute for Research in Construction, National Research Council Canada, 2002. (Research Report 102) 96 pages

STATUS : New Completed Report

AVAILABILITY : On a loan basis only from: Canadian Housing Information Centre

REDUCTION OF AIR INTAKE CONTAMINATION OF HIGH-RISE RESIDENTIAL BUILDINGS

In the study, entitled, 'Reduction of Air Intake Contamination of High-Rise Residential Buildings', buildings will be tested to determine optimal placement of air intake grilles for HVAC systems. The placement determination will be based on water flume tests and modeling of air movement around high-rise buildings given confounding factors such as the height and proximity of neighboring buildings. A literature survey of relevant research on air intake grille location and contamination potential will also be performed.

CMHC Project Officer : *Duncan Hill*

CIDN : 2305 0200009

Division : External Research Program

STATUS : Ongoing

AVAILABILITY : Product is not yet available

STUDY OF NECESSARY CHANGES TO HARMONIZE STANDARDS REQUIREMENTS RELATED TO COMBUSTION VENTING

In the recent review of ventilation codes and standards, it became clear that standards from different agencies use disparate means of assessing whether a house chimney or vent is at risk. A contractor is examining the requirements from each standard and drafting appropriate code language to present to those committees. It would be ideal if all agencies used the same criteria in their specifications and inspections.

CMHC Project Officer : *Don Fugler*

CIDN : 2492 0200005

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

HEATING AND VENTILATION

TECHNICAL AUDIT AND RESERVE FUND STUDY, LEBRETON FLATS DISTRICT HEATING SYSTEM

The Lebreton Flats District heating system was commissioned 20 years ago to demonstrate the use of a low temperature district hot water heating system within the context of a high density North America residential neighbourhood. CMHC has initiated a project to assess the condition of the project's reserve fund with respect to its ability to fund major system repairs and renewal projects over time. The research will aid the project's management team in budgeting monthly reserve fund contributions to meet future needs of the district heating system.

CMHC Project Officer : *Duncan Hill*	***CIDN*** : 2511 0200002
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

BEST PRACTICE GUIDE - FIRE AND SOUND ASSEMBLIES FOR MULTI-FAMILY BUILDINGS

This document, targeted at designers of multi-family buildings, will provide the latest information on CMHC research into fire and sound partitions, floors, flanking, plumbing noise, etc. Construction details for fire and sound assemblies will be detailed. The document is being produced in collaboration with the NRC/IRC, and should be available this fall.

CMHC Project Officer : *Ken Ruest*	***CIDN*** : 1804 0200003
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

BEST PRACTICE GUIDE - WOOD FRAME ENVELOPES IN COASTAL CLIMATES OF BRITISH COLUMBIA

Building in B.C.'s coastal climate has special challenges -- and this revised guide is the most up-to-date, authoritative information available to help meet those challenges. This guide provides the most comprehensive technical information on how to build to withstand the conditions of B.C.'s coastal climate. The information includes behaviour of wood in construction, moisture source control strategies, heat flow mechanisms, typical envelope assembly characteristics, and materials for inclusion in specifications, quality assurance strategies, maintenance and renewal strategies and more that fifty-three state-of-the-art CAD details showing several air barrier strategies, all included on the companion CD-ROM. Endorsed by the Canadian Wood Council and the Building Envelope Research Consortium.

Ottawa: Canada Mortgage and Housing Corporation, 2001. 258 pages + CD-ROM

Order Number: 60959 **Price: $89.00 + GST and handling charges

NOTE : Aussi disponible en français sous le titre : Guide des règles de l'art : Enveloppe de bâtiments à ossature de bois dans le climat littoral de la Colombie-Britannique

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

BEST PRACTICE GUIDE FOR CURTAIN WALLS

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to curtain wall systems in housing applications. The curtain-wall is a well developed system in commercial applications but it requires special treatment when used in housing. The project will be conducted in partnership with curtain wall manufacturers and installers and their associations. This Guide will be produced as a joint publication through a collaborative project with Public Works Government Services Canada. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to curtain walls, construction details in AutoCAD format, outline specifications and additional sources of information and references.

CMHC Project Officer : *Luis de Miguel* — ***CIDN*** : 2216 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

BEST PRACTICE GUIDE FOR EXTERIOR INSULATED FINISHED SYSTEMS (EIFS)

The objective of this project is to develop a practical, advisory document for designers, architects and engineers, and manufacturers, related to EIFS in residential applications. The project will be conducted in partnership with EIFS manufacturers and installers and their associations. This Guide will be produced as a joint publication through a collaborative project with the EIFS Council of Canada and the BC Wall and Ceiling Association. The Guide, produced in hard copy and CD-ROM format, will address: pertinent building science with emphasis given to aspects particular to EIFS, construction details in AutoCAD format, outline specifications and additional sources of information and references.

CMHC Project Officer : *Luis de Miguel* — ***CIDN*** : 2047 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

BUILDING ENVELOPE TEST HUT FACILITY PHASE 2 FEASIBILITY STUDY

CMHC has provided a financial contribution to the British Columbia Institute of Technology to undertake and complete a phase 2 feasibility study of a Building Envelope Test Hut (BETH). The project is expected to be completed by the end of 2002.

CMHC Project Officer : *Silvio Plescia* — ***CIDN*** : 2384 0200002
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

BUILDING RATING AND LABELING SYSTEMS

This project's objectives are to assess the changes that would have to be made to the 'LEED' rating system (owned by the US Green Building Council), to suit it to Canadian conditions; and to evaluate whether the existing Canadian 'Green Leaf' system (owned by ECD Canada), can readily be harmonized with LEED and whether it is likely to be able to function as a low-cost and simple complementary system.

CMHC Project Officer : *Sandra Marshall* — ***CIDN*** : 2474 0200017
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CHARACTERIZATION OF THE STOCK OF CONDOMINIUM BUILDINGS IN CANADA

The number and characteristics of condominiums in Canada are unknown. This project reviewed Statistics Canada data files to estimate the number of condominiums in Canada, their location, age, number of storeys and number of suites based on the number of building permits issued since 1970. Using STATSCAN data, it was concluded that approximately 6,000 condominium buildings exist in Canada. Based on discussions with the Canadian Condominium Institute and other agencies, this estimate likely understates the number of buildings. The review also found that buildings could not be classified by the number of storeys nor number of units using STATSCAN data. Based on the outcome of this project, CMHC is in the process of developing another project to review the data available on condominiums within municipal files.

CMHC Project Officer : *Duncan Hill*
CIDN : 2277 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

CONDITION SURVEY OF CONDOMINIUMS IN THE GREATER TORONTO AREA (GTA)

This project's objective is to carry out a condition survey of condominiums in the Greater Toronto Area. This project will be carried out in two phases. Phase 1 focuses primarily on data collection and development of research methodologies for examining topics related to both physical and social issues. Phase 2 focuses on conducting the surveys and completing the analysis of the state of repair of the buildings.

CMHC Project Officer : *Sandra Marshall*
CIDN : 2161 0200002
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR)

A database structure to house building characteristics, energy and water usage data for multi-unit residential buildings has been completed. The database, known as HiSTAR (High rise building Statistically Representative Database) is in MS ACCESS format. The database will be used to compile and analyze building energy and water data collected during CMHC's research projects which take consultants into high-rise residential buildings. The HiSTAR database will be used to generate fact sheets on energy and water use and will be used for the analysis of the potential impact of energy and water efficiency upgrades.

STATUS : Completed
AVAILABILITY : There will be no product for this project

DEVELOPMENT OF THE HIGH-RISE STATISTICALLY REPRESENTATIVE HOUSING DATABASE (HISTAR) TASK 2: COLLECTION OF ADDITIONAL BUILDING FILES FOR THE HISTAR DATABASE

CMHC has commissioned a research project to gather information to characterize the energy and water consumption patterns in multi-unit residential buildings. This data will be used to supplement the data contained in the CMHC HiSTAR database. The HiSTAR database is used to baseline water and energy use in multi-unit residential buildings and is also used to evaluate the impact of building and occupancy characteristics and location on energy and water use.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2366 0200002
STATUS : Ongoing

FIRE AND ACOUSTICAL PERFORMANCE OF FLOOR ASSEMBLIES - PHASE II

A continuation of an earlier project, this phase will be carried out over 4 years with a total budget of $2.2 million. A dozen industry and government partners have formed a consortium with the National Research Council of Canada to complete testing of several types of assemblies for residential construction. Results will be incorporated in the National Building Code of Canada. Both full and small scale fire and sound testing will be carried out. A large database will be developed which designers and builders can use for reference. Particular attention will be given to assemblies likely to just obtain an STC 50 rating.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2375 0200001
STATUS : Ongoing

GUIDELINES FOR THE RETROFIT OF UNINSULATED MASONRY WALLS

Investigations of previously retrofitted solid masonry walls have been performed to determine the impact that the interior application of insulation has on the durability of the walls. The findings of the investigations will be published as case studies. Case studies will include a 120 year old solid masonry building in Montreal that was insulated 15 years ago by the application of spray applied polyurethane insulation on the interior of the walls, a 50 year old solid masonry office building in Ottawa that was insulated on the interior 8 years ago and several 1900's vintage apartment buildings in the Ottawa area. Preliminary indications are that the interior application of insulation has not adversely affected the durability of the masonry walls of the case study buildings but further investigation will be required to confirm that this conclusion generally holds true for other buildings.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : N/A
STATUS : Ongoing

HEALTHY HIGH-RISE : A GUIDE TO INNOVATION IN THE DESIGN AND CONSTRUCTION OF HIGH-RISE RESIDENTIAL BUILDINGS

This document is designed to reflect the innovation that can lead to the design and construction of better performing buildings. It provides:
-- an overview of many of the problems affecting high-rise buildings which result from conventional practices;
-- insight into an improved understanding of the building science principles; and
-- design considerations for improved building performance in a variety of areas.

The document is intended to present alternative ways of thinking about design principles for high-rise buildings, to provide some different approaches to design and construction, commissioning and operations and maintenance. In many cases, it presents the need for a more holistic and integrated approach to the design and construction of a high-rise residential building. Issues related to retrofit opportunities and regional differences are also discussed when they apply.

Opportunities are also discussed for improving the integration of high-rise residential buildings with the surrounding urban infrastructure, including on-site systems for energy and water supply, transportation and waste management. Finally each section includes "Sources of Information" to recent research and development studies. The guide is designed for architects and other building design professionals.

Prepared by: The Sheltair Group, Société Logique Inc., Paul Kernan, architect. Ottawa: Canada Mortgage and Housing Corporation, 2001. 153 pages

Note: Aussi disponible en français sous le titre : Tours d'habitation saines

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

INVESTIGATION PROTOCOL FOR EVALUATION OF POST-TENSIONED BUILDINGS

There is more than one billion square feet of concrete structures which utilize unbonded post-tensioned reinforcement in North America. In general, these buildings perform well provided that moisture access to the unbonded post-tensioned reinforcement is avoided. However, buildings constructed in this manner do require special evaluation techniques to avoid misdiagnosis that can lead to inappropriate, expensive, or unnecessary repairs. Alternatively, serious safety issues may be left undiscovered if the evaluation program fails to recognize the unique issues related to unbonded post-tensioning systems. The purpose of this document is to provide an understanding of the unique technical requirements for investigation and maintenance of buildings with unbonded tendons. It is intended that this document be a guide for owners, property managers, and others with an interest in real estate, to develop consistent standards and expectations for the assessment and maintenance of unbonded post-tensioned structures.

Prepared by John Harder, David Rogowsky, and Anast Demitt. CMHC Project Officer: Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) 46 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

HIGH-RISE AND MULTIPLE UNIT CONSTRUCTION

LOAD PROFILES IN MULTI-UNIT RESIDENTIAL BUILDINGS: PILOT STUDY ON LOAD PROFILING IN METRO TORONTO HOUSING

This project will describe load profiling work underway in Metro Toronto Housing Corporation multi-unit residential buildings. The project will characterize thermal, electrical power and water requirements in the apartment buildings and will also identify technical issues encountered in load monitoring and data interpretation. This project is being used as a pilot project to identify the factors that will have to be considered in a larger project being planned by CMHC and Natural Resources Canada to assess the energy and water load profiles in low and high-rise housing.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2201 0200001
STATUS : Ongoing

MODELING OF AIR/MOISTURE MOVEMENT AND DURABILITY PERFORMANCE OF RESIDENTIAL AND COMMERCIAL BUILDINGS

The purpose of this project is to develop knowledge to assess the impact of various wall design and indoor-outdoor environmental conditions on the durability and energy efficiency of new and retrofitted high-rise residential and commercial building systems. The hygIRC heat, air and moisture model developed by the Institute for Research in Construction is being used to model common wall systems. Retrofits to improve the airtightness and insulation levels in the walls were developed and are being applied to the basic wall systems. The hygIRC model will simulate heat, air and moisture conditions within the retrofitted walls to determine how the retrofits affect the durability of the wall system. This information will be used as a means to confirm the integrity of several specific retrofit measures developed for high-rise wall structures before they are recommended to the building industry.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 1934 0200003
STATUS : Ongoing

MONITORING INNOVATIVE MECHANICAL AND ELECTRICAL SYSTEMS

The innovative mechanical and electrical energy producing systems in a multi-unit residential buildings project in Toronto were monitored and assessed to determine their economic viability. The project involved the assessment of the buildings cogeneration, space heating, absorption chilling, domestic hot water and ventilation systems and a review of natural gas and electricity use. The cost of energy provided to the building by the cogeneration system in terms of fuel consumption, maintenance expenditures, avoided electrical use and other considerations was determined. An inspection of the individual space conditioning systems within the suites was also performed. The findings of the investigation showed that the operation costs (fuel use, maintenance and repair) of the cogeneration system was not economically viable. Key findings include the observation that the system was not making full use of the heat generated by the cogeneration systems. The report estimated that even if all of the heat was recovered from the cogeneration system, the benefit of the system to the building's owners would be marginal. Given that the building embodies some of the most advanced technologies that allow for energy efficiency, cascading and recovery, operation costs should have been low relative to conventional buildings.

CMHC coordinated a meeting of the project developer, engineering design team, cogeneration system manufacturer, utility representative and industry experts and stakeholders to review the situation in the building and to determine whether or not the performance of the building systems could be improved. The outcome of the meeting was that a review of the utility meters and billing history should be undertaken to confirm that the basic information being used to assess the performance of the building is correct.

The review found that the buildings had many questionable energy loads that could not be easily explained. It was suspected that the electric ramp heater was not operating correctly. Similarly, one of the buildings of the project had twice the energy use of the other building but the reason for this is not clear. The project also found problems with the meters used to monitor electricity use by the commercial units on the ground floor. It was determined that the meters significantly underestimated use. Based on the outcome of this project, the building owners will be conducting further investigations.

CMHC Project Officer : *Duncan Hill*
CIDN : 1260 0800001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

PERFORMANCE OF AN INNOVATIVE HIGH-RISE RESIDENTIAL BUILDING

CMHC is monitoring the performance of a recently constructed multi-unit residential building that implemented many of the most innovative building technologies developed to date. The building features a durable, airtight and highly insulated building envelope, combination space and domestic hot water heating systems in each apartment, individual heat recovery ventilators in each apartment, thermally isolated balcony slabs, a heat recovery system for corridor ventilation and garbage room odour containment. The monitoring project will assess the performance of the building envelope, the space and domestic hot water heating systems and the efficiency and effectiveness of the ventilation systems. Air movement throughout the building will also be assessed. To date, the building has been air tested to assess its air leakage characteristics. The tests showed that the building is one of the most airtight multi-unit residential buildings constructed in Canada. Energy and water monitoring has shown that the building consumes approximately one half of the average energy and water used in conventional apartment buildings.

CMHC Project Officer : *Duncan Hill*
CIDN : 2147 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

REPAIR AND RETROFIT CASE STUDIES OF THE LOFTS CORTICELLI COMPLEX

A field project to review the condition of the solid masonry walls of a historic building in Montréal has been completed. The building, originally constructed in the 1800's, was converted to residential use in 1986. As a part of the renovation, the interior of the solid masonry brick walls was insulated with spray applied polyurethane foam and fibreglass batt insulation. As this type of insulation retrofit was thought to be responsible for the deterioration of solid masonry walls, CMHC initiated a project to assess the condition of the building envelope and all of the elements. The field survey found that the walls, after 14-15 years of service, were in good condition. No conditions or symptoms were found that would lead to the conclusion that the application of the spray applied polyurethane foam and other finishing materials had, in anyway, undermined the integrity of the wall system. This finding is important as many older buildings in the urban areas of Canada are being renovated to residential use and exterior insulation retrofits are not possible for heritage or aesthetic reasons. While the finding of this study is specific to this one building, it appears that interior insulation wall retrofits may be possible as long as steps are taken to prevent the intrusion of moisture and air leakage from both interior and exterior sources into the wall assembly. Susceptible wall members, such as embedded wood structural members should be protected as well. CMHC will perform additional case studies of retrofitted solid masonry walls to provide a better understanding of the strengths and weaknesses of this form of renovation.

CMHC Project Officer : *Duncan Hill*
CIDN : 1782 0300020
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

REVISIONS TO BRICK VENEER STEEL STUD BEST PRACTICE GUIDE

The objective of this project is to produce a revised version of CMHC's Brick Veneer Steel Stud Best Practice Guide.

CMHC Project Officer : *Luis de Miguel*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2378 0200003
STATUS : Ongoing

STUDY OF HIGH-RISE ENVELOPE PERFORMANCE IN THE COASTAL CLIMATE OF BRITISH COLUMBIA

In recent years, there have been significant efforts to understand and resolve moisture ingress and deterioration problems associated with wood-framed, low-rise building construction. Currently, this problem is acute in some wood-frame condominiums in the Lower Mainland of British Columbia. There are indications that the high-rise stock may also be experiencing similar moisture problems. The objective of this project was to examine the files of a sample of thirty-five buildings to identify causal relationships that have resulted in building envelope problems and successes in non-combustible high-rise residential buildings in the coastal climate of lower mainland BC. This was done by correlating building envelope performance with sources of moisture, and features of design and construction of assemblies and details. The project did not estimate the extent of a potential problem. The project focused specifically on envelope details and envelope systems that have failed, rather than building failures. Envelope types and components under review included window/wall assemblies and light-gauge steel stud (back-up) wall assemblies with stucco, masonry and EIFS cladding systems. Project funding has been provided by Canada Mortgage and Housing Corporation in partnership with the Homeowner Protection Office, the City of Vancouver, the EIFS Council of Canada and Vancouver Condominium Services Ltd.

Prepared by RDH Building Engineering Limited. CMHC Project Officers: Mark Salerno, Silvio Plescia. Ottawa: Canada Mortgage and Housing Corporation, 2001. 1 CD-ROM

NOTE: No. 02-120 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed CD-ROM and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

TECHNOLOGY ROAD MAP FOR INTELLIGENT BUILDING TECHNOLOGIES

The objective of this project is to develop a road map for intelligent building technologies, considering the potential technological, societal and other developments that will affect the industry within the next five years.

CMHC Project Officer : *Sandra Marshall*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2388 0200001
STATUS : Ongoing

HOME OWNERSHIP

CONDOMINIUM BUYER'S GUIDE

This guide is being developed to assist buyers in choosing a condominium which meets their personal and financial needs. The guide will provide buyers with an overview of the operation of different condominiums and important questions to address when choosing a condominium to meet the lifestyle and financial needs of the buyer. In addition, the guide will provide guidelines on evaluating the financial and physical status of an existing condominium. Information on evaluating the physical condition of the individual unit, the condominium building and grounds, and the financial status of the condominium will also be covered. Contact information for acquiring additional information and assistance will be included.

CMHC Project Officer : *Duncan Hill*
CIDN : 2514 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

HOUSE CONSTRUCTION

ALTERNATIVE WALL SYSTEMS FOR LOW-RISE RESIDENTIAL CONSTRUCTION

The purpose of this study was to research ten alternative wall systems for low-rise housing in use today. These systems included insulated concrete forms, straw bale, structural insulated panels, stack wall, concrete block, post and beam, log, earth construction, manufactured wood, and lightweight steel. The results of this study will be beneficial to those in the industry to help them make better informed decisions on choices between alternative systems. This study investigated the differences, benefits and limitations of the various building systems which are currently in use as compared to the typical wood-frame, stick-built construction of low-rise housing. It considered the benefits and drawbacks of the various systems. The study examined a number of the factors to be considered by a builder or homeowner to help them understand the differences between the available system choices so they may evaluate and select systems appropriate to their clients, house designs, trade practices and skills, and regions The study included reviews by industry representatives.

NOTE: No. 02-132 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Research Highlight
AVAILABILITY : CMHC Information Products and on the CMHC web site

BUILDING ENVELOPE SOLUTIONS - THEORY AND PRACTICE

This was a partnership project between the Canadian Home Builder's Association of British Columbia (CHBA/BC), the Homeowner Protection Office (HPO) of B.C. and CMHC. The purpose of the project, previously called "Builders ToolBox", was to develop materials which would be used to train general contractors and subtrades in building construction practices that would enable them to construct highly durable building envelopes for new residential wood-frame buildings located in the lower mainland of British Columbia and Vancouver Island and to restore and upgrade the envelopes of existing buildings. The end product is a manual divided into 11 modules: Introduction; Building Science; Results of Survey of Buildings in the Lower Mainland; Condensation Control in

Wall Assemblies; Rain Penetration Control in Wall Assemblies; Sheathing, Sheathing Membranes, Claddings and Flashings; Windows and Doors; Roofs, Decks, Walkways and Balconies; New Construction of the Building Envelope; Restoration of the Building Envelope; and Regulatory Requirements and Standards. The material can be tailored to meet the various needs of the residential construction industry in B.C. The course is currently being offered by the British Columbia Institute of Technology.

STATUS : Completed
AVAILABILITY : Seminar/training is available

CANADA'S CONSTRUCTION SYSTEM. ABOUT YOUR HOUSE; CE42

The purpose of this fact sheet is to foster understanding of the elements of the system of construction, and operation of buildings and houses in Canada. The fact sheet outlines the systems to help determine what should be built, systems for quality control, systems to improve business and technical knowledge, systems to allocate responsibility, systems for recourse, systems to respond to problems and systems for keeping up to date.

Ottawa: Canada Mortgage and Housing Corporation, 2002. 8 pages

Order number: 62966

Note : Aussi disponible en français sous le titre : Système de construction Canadien

STATUS : New Completed Fact Sheet
AVAILABILITY : CMHC Information Products and on the CMHC web site

COMPARING THE PERFORMANCE OF TWO-COAT VS THREE-COAT STUCCO

CMHC through its Prairie and Northwest Territories Business Service Centre in Calgary is supporting this Alberta Housing Industry Technical Committee (AHITC) research project. The research will use laboratory and field testing to compare the performance of two coat stucco commonly used in the Prairies and standard three coat stucco. If they perform similarly, building code changes may be recommended. The contractor has completed the review of test procedures and has undertaken the laboratory work. Two coat stucco did not have the same strength in laboratory testing as code-required three coat. Field tests are being organized to see if two coat stucco applied to actual houses is performing as well as three coat.

CMHC Project Officer : *Don Fugler, Colin Crumb*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2399 0200
STATUS : Ongoing

DEVELOPMENT OF AN INSTRUCTOR'S GUIDE AND AN ACCOMPANYING PRESENTATION FOR RESIDENTIAL GUIDE TO EARTHQUAKE RESISTANCE

The objective of this project was to develop a course to advocate the importance of, and to convey knowledge on making houses more resistant to earthquakes. There will be two courses developed. The first one, which was developed in partnership with the British Columbia Institute of Technology (BCIT), is approximately 18-24 hours in length and will be targeted to designers, builders and renovators. It covers information on construction techniques to better prepare housing to withstand an earthquake. The second course, which will be developed in-house by CMHC staff from the long course, will be approximately 6 hours and targeted to a general audience of consumers. It will address consumers' concerns regarding the durability of their housing during disasters. The development of the industry course is completed and is to be piloted through

BCIT this Fall and Winter, 2002. Following the pilot any required modifications will be made to the course material.

CMHC Project Officer : *Darrel Smith, Mark Salerno* **CIDN** : 2517 0200001
Division : Policy and Research Division **STATUS** : Completed
AVAILABILITY : Seminar/training is available

FEASIBILITY OF DEVELOPING A BUILDING CANADA PROGRAM

The purpose of this project by EnerQuality Corporation is to examine the feasibility of developing a Building Canada program similar to the Building America model. To be effective, the Canadian program needs to be of interest to Canadian builders and recognize the different environment by responding to their real needs, i.e., reducing construction costs, customer callbacks, warranty claims, construction time, and construction waste, while at the same time improving the energy efficiency of their new houses. The program will result in little or no additional cost for the builder and where ever possible a reduction in costs. This study is a necessary first step to determine if a Building Canada program is viable and could be established in Canada. It will draw from the experience of the Building America program as well as the results achieved in a pilot of this program with two large Canadian builders. This project is being managed by EnerQuality Corporation on behalf of a consortium of partners including; CMHC, Enbridge Consumers Gas, Union Gas, Owens Corning, and Natural Resources Canada. Once this initial program design phase has been completed, and if found feasible, the program will be launched and expanded as part of subsequent phases.

CMHC Project Officer : *Darrel Smith* **CIDN** : 2387 0200002
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

FEASIBILITY STUDY ON THE DEVELOPMENT OF A COMMISSIONING GUIDE FOR NEW HOUSES

The purpose of this project was to assess the importance and determine the feasibility of developing a commissioning guide for builders and buyers of new houses. The research indicated that generally home builders do not currently carry out a whole house commissioning and do not have a protocol to do so. However with houses becoming more complex, there is greater need to have a competent person investigate the whole house and all its systems to ensure they are installed and functioning as originally designed before delivery to the buyer. To be effective and useful, the commissioning guide must be simple to use and yet comprehensive. It must not add significantly to the cost of the house. Commissioning should not be a duplication of services already in place. The guide should include a review of the installation and operation of all major components and systems of the house. The study found that the benefits of the house commissioning process are that:

- houses perform better;
- homeowners are assured the house is built as expected according to the plans and specifications and the components and systems have been installed and are functioning properly;
- homeowners are better informed about the systems in their houses and how they work (resulting in less call backs for contractors); and
- potential problems are identified before damage occurs (also resulting in less call backs for contractors and reduced costs for warranty programs).

The study identified a need and found interest by clients and stakeholders in the development of a commissioning guide. As a result, CMHC is considering the development of a commissioning guide.

Prepared by Buchan, Lawton, Parent Ltd. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Darrel Smith. Ottawa: Buchan, Lawton, Parent Ltd., 2001. ca. 100 pages

STATUS : Completed Report
AVAILABILITY : on a loan basis from Canadian Housing Information Centre

RESEARCH ON SOLUTIONS TO PYRITE-RELATED BACKFILL EXPANSION PROBLEMS

This study will draw up an inventory of the problems associated with the reactions of the pyrite (iron sulphide) contained in the backfill stone used under slabs in residential properties. Two hundred houses inventoried in three Montréal South-Shore municipalities will be visited under the CTQ-M200 protocol developed as part of the work of the Quebec technical committee on pyrite-related problems. The results of the study will identify possible causes and potential affordable solutions. The objective is to provide the industry with a more global vision of this new situation.

CMHC Project Officer : *Jacqueline Meunier-Bureau* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SEISMIC UPGRADES TO LOW RISE HOUSING

Design and construction practices have indirectly resulted in a progressive decline in the earthquake (seismic) performance of a majority of residential wood frame buildings of more than one storey in height. This work will identify practical, cost-effective changes in current residential wood frame construction and retrofit design and practice that will substantially reduce vulnerability to damage during strong earthquake events. Results from this research are expected by the Spring of 2003.

CMHC Project Officer : *Silvio Plescia* ***CIDN*** : 2538 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

WOOD USAGE IN STRAW BALE HOUSE CONSTRUCTION

This is another in a series of small projects assessing the acceptability of straw bale walls for housing. The contractor totaled the wood used during the construction of his load-bearing, straw bale building, and then compared it to a simulated, conventional building of the same size and design. In this simple design, without interior partitions, the straw building used over 45% less wood than the corresponding conventional house. This study uses the straw bale building type that is most likely to show an advantage. For straw bale houses using post and beam construction, or having significant interior framing, wood savings would be much reduced.

Research Contractor: Scott Pegg, Eco-Way Living Group Inc. CMHC Project Officer: Don Fugler. Ottawa: Canada Mortgage and Housing Corporation, 2002. (Research Highlights; Technical Series; 02-116) 2 p.

NOTE : Aussi disponible en français sous le titre : L'utilisation de bois dans la construction de maisons en ballots de paille

STATUS : Completed Research Highlight
AVAILABILITY : CMHC Information Products and on the CMHC web site

WORKSHOP ON WOOD CONSTRUCTION DETAILING

This project's purpose is to produce material for a one-day workshop on wood frame detailing for new buildings, addressed to architects, engineers and designers, with a focus on durability, buildability, acoustic performance and fire safety, based on a variety of CMHC publications.

CMHC Project Officer : *Luis de Miguel*	***CIDN*** : 2534 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

HOUSING DESIGN

DESIGN MULTIPLE-UNIT CHUM'S AND MODULAR HOUSE PACKAGES FOR URBAN AND SUBURBAN, REMOTE AND NORTHERN COMMUNITIES

The purpose of this project is to support the preparation of design drawings, construction specifications and cost estimates for several Multi-Unit CHUM's (Containerized Heat and Utilities Modules), and for matching Modular House Designs that would integrate with these CHUM's, specifically for the suburban and rural, remote and northern communities contemplated. A CHUM provides on-site utility services for housing. The project is about 85% complete - a draft version of a design manual has been produced in both a printed format and as a CD-ROM. The project has been delayed in part due to difficulties in establishing candidate sites for demonstration and/or commercial application. The manufactured housing industry has been a key participant/supporter of this project.

CMHC Project Officer : *Chris Ives*	***CIDN*** : 2407 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

FLEXHOUSING FEATURES COST COMPARISONS - IN A BENCHMARK HOUSE DESIGN

Flex housing is affordable, adaptable and accessible housing. It takes extra planning time, but the pay-off is a comfortable home that will satisfy the occupants' changing needs over its lifetime. This project shows the breakdown of costs involved in building with many of the FlexHouse options, as well as the cost to renovate an existing house to give it those qualities. Costs were determined in Saskatoon in 2002.

No. 109 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Research Highlight

AVAILABILITY : CMHC Information Products and on the CMHC web site

MONTRÉAL: A RICH TRADITION IN MEDIUM-DENSITY HOUSING

This report presents facts, findings and new hypotheses on the origins and evolution of Montreal's housing tradition which developed primarily during the 19th century. The local "plex" building typology is identified:
-- first as a multi-family structure sheltering from two to six dwellings, each with through access from the front to the rear of the buildings;
-- second as a housing type adapted to a dominant rental market;
-- thirdly as a thoroughly urban built form, laid out in rows of two to four storeys, marking an intermediate building type between the "dwelling house" and the "tenement".
These three characteristics produced a medium-density housing environment which today provides sought-after urban dwellings known for their flexibility in adapting to different household types, needs and means. It also presents a sensible example of urban dwelling between the single-family house and high-rise towers. The report proposes new hypotheses on the sustaining historical conditions underlying the development of the "plex" and the influences on its built form, a practical tale of the transfer and contribution of French and Scottish housing patterns in Canada.

Prepared by David B. Hanna and François Dufaux. CMHC Project Officer: Brian Eames. Ottawa: Canada Mortgage and Housing Corporation, 2002 (External Research Program Research Report) 187 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

QUANTIFYING UNIVERSAL DESIGN: A PROGRAM FOR IMPLEMENTATION

This research project was to identify methods to acquire the pragmatic information needed to further the principles of universal design. These principles of flexibility, ease of use, etc. were validated with some modifications. As in previous research, the concepts inherent in universal design were seen as critical, appropriate and useful to create more inclusive environments.

The methodology for this project featured a literature search, the preparation of a discussion paper, and a meeting with people with diverse expertise discussing questions related to develop methods for collecting and organizing information to promote universal design.

The literature review found that most current dimensional information fails to meet criteria developed from a universal design perspective. In particular, people with disabilities, people 65 years and older, children, and pregnant women were under-represented in the samples and in the types of dimensional information available. As well, the information that was available was usually presented as separate from the 'general population' rather than integrated into inclusive databases.

The final report includes a summary of the meeting discussions with a description of a proposed methodology, discussion of resources needed to implement such research projects, and the organization of a database. The appendices include a glossary, the background discussion paper with a literature review synthesis, and the list of consultants.

A report of a workshop, October 13-14, 2001, Winnipeg, Manitoba. Researched and prepared by F. G. Consortium, Gail Finkel & Yhetta Gold in collaboration with Betty Havens, Juliette Cooper. Ottawa: Canada Mortgage and Housing Corporation, 2001. (External Research Program Research Report) 54 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

ACHIEVING HEALTHY INDOOR ENVIRONMENTS: A REVIEW OF CANADIAN OPTIONS

There is convincing evidence that poor indoor air quality (IAQ) is damaging people's health. It has been linked to increases in asthma, allergies and multiple chemical sensitivities. In fact, the United States Environmental Protection Agency has rated poor IAQ as being among the top environmental risks to human health.

With funding from Canada Mortgage and Housing Corporation and five other project sponsors -- Venmar Ventilation Inc., NIKE Inc., Health Canada, Interface Flooring Systems (Canada) Inc. and Lever Pond's -- Pollution Probe has produced a report bringing together, for the first time, components of the indoor environment issue previously treated separately. This report looks at strategies for encouraging voluntary initiatives, best practices in the field, legal aspects of IAQ, and the market for indoor environmental products and services.

The report is organized into four parts. The first part briefly outlines why progress has been slow on resolving indoor environment issues, identifies key elements of effective indoor voluntary initiatives and describes a new strategy of "Maximum Voluntary Initiatives." The second part of the report provides an in-depth review of twenty voluntary initiative case studies. The third part of the report provides a summary of the legal aspects of IAQ. The fourth part of the report contains an overview of the Canadian indoor environment industries, including the identification of market drivers and key barriers to future industry development. This section contains recommendations for supporting local suppliers of products and services to the indoor environment.

Each part of the report recommends options for creating healthier indoor environments in Canada. At the core of the recommendations, and of the ideas reflected in the report, is the need for a comprehensive strategy to address the indoor environment issues in Canada.

Prepared by Ian Morton of Pollution Probe and Jay Kassirer of Cullbridge Marketing and Communications. Toronto: Pollution Probe, n.d. 230 pages.

NOTE: No. 02-105 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Final report is published and distributed by Pollution Probe Foundation (416) 926-1907. Research Highlight is available on the CMHC web site and from CMHC Information Products

BONHEUR DU BON AIR - ALONG WITH THE DRAFTING OF AN ACCOMPANYING BOOKLET

This project's objective is the production of a CD entitled "Le bonheur du bon air", along with the drafting of an accompanying booklet.

CMHC Project Officer : *Jean Rattelle*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 2463 0200002

STATUS : Ongoing

HEALTHY INDOORS: ACHIEVING HEALTHY INDOOR ENVIRONMENTS IN CANADA

Many indoor environments in Canada were just as polluted in 2001 as they were 30 years earlier, despite numerous conferences and reports on the subject since the 1970s. Several leading US authorities, Canada Mortgage and Housing Corporation, and others have consistently identified indoor pollution as posing one of the most serious health risks.

The situation in Canada has developed largely because there are no clear structures or national strategies for addressing indoor environments. In contrast to outdoor environment issues, government policy on indoor environments is limited and fragmented.

To address this issue, Pollution Probe launched "Healthy Indoors" in cooperation with a wide range of government, non-government and industry stakeholders. "Healthy Indoors" includes 12 sponsors and 30 supporting partners interested in developing a collaborative and comprehensive multi-stakeholder strategy for creating and maintaining healthier buildings in Canada between 2002 and 2020

This final report is a compilation of a multi-year effort to develop and implement a strategy for creating healthier indoor environments in Canada. Specifically, the report identifies 15 action items that form the basis of a strategic direction for achieving healthy indoor environments in residential, commercial and institutional settings. The report presents the rationale for each action item; provides an implementation plan; identifies the players; proposes timing; indicates who is responsible for monitoring; and states how performance will be reported. The linchpin of the recommended actions and the ideas contained in the report is the need for an indoor environment secretariat to advocate on behalf of, coordinate activities for, monitor, and expand the number of organizations and individuals working for health indoor environments in Canada.

Prepared by Ian Morton of Pollution Probe and Jay Kassirer of Cullbridge Marketing and Communications. Toronto: Pollution Probe, 2002. 49 pages

NOTE: No. 02-125 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site

STATUS : New Completed Report and Research Highlight

AVAILABILITY : Final report is published and distributed by Pollution Probe Foundation (416) 926-1907. Research Highlight is available on the CMHC web site and from CMHC Information Products

INDOOR AIR POLLUTION FROM ATTACHED GARAGES

CMHC contributed to a Health Canada/Environment Canada project investigating the infiltration of garage-based pollutants into houses. Twenty-five Ottawa houses have been tested to determine the leakage area between the house and the attached garage. Pressure differentials were recorded and pressure testing was repeated during the winter months. Further field testing took place in the winter of 1998/99, including modeling of the IAQ implications and monitoring of pollutant entry when the garage is occupied by a "calibrated" car. Modelling of results showed that one proposed solution, garage exhaust fans, could be effective in some houses but near useless in others. The research is being published in various peer-reviewed publications during 2002. CMHC released a Research Highlight (Technical Series 01-122) on the airtightness testing aspect of the project in summer 2001. Additional testing will start in late 2002, with twenty additional houses being airtightness tested in each of two additional cities. The new study will also look at the measured effectiveness of measures to reduce garage to house air movement.

CMHC Project Officer : *Don Fugler*

Division : Policy and Research Division

AVAILABILITY : Product is not yet available

CIDN : 1910 0200002

STATUS : Ongoing

POUSSIÈRE DOMESTIQUE : UN OUTIL EFFICACE ET ABORDABLE D'ÉVALUATION DE SALUBRITÉ MICROBIENNE RÉSIDENTIELLE : RAPPORT FINAL

In the Greater Montréal area, in 2000 and 2001, the microbial content of the dust of 68 "healthy" homes with no water damage and no occupant health symptoms was compared to that of 145 "unhealthy" homes with major water damage. The average mould counts are seven times higher than in the unhealthy homes. The distribution of mould in healthy homes, with a predominance of genera like Cladosporium and Alternaria, differs from that in unhealthy homes, with genera such as Penicillium and Aspergillus. These results show that the mould content of the dust in a home is an indicator of its degree of microbial health.

Prepared by Marie-France Pinard, Laboratoire MICROVITAL. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Ken Ruest. Ottawa: CMHC, 2002. (External Research Program) ca. 29 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

PRINCE EDWARD ISLAND BIRTH COHORT STUDY OF MOLD IN HOMES

This joint study between CMHC, Carleton University, Health Canada and others is examining a large sample of homes in Prince Edward Island to determine the biological exposure, house performance parameters and energy use characteristics of a statistically-representative set of houses occupied by newborn babies. Part of the study will follow the health of these babies to determine the degree to which damp and moldy houses result in increased infant health problems. A total of 291 houses have been tested at the end of the fifth year of the project. An additional 75 houses are to be tested during winter 2002-2003. Due to the long term nature of this research, research reports have not as yet been issued.

CMHC Project Officer : Ken Ruest
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 1618 0300001-2
STATUS : Ongoing

RENOVATING THE HOME FOR ASTHMA: AN INTERVENTION STUDY

The purpose of this project is to study the relationship between air quality in housing and respiratory health. Health Canada, Carleton University and Natural Resources Canada are partners and are represented in the project advisory committee. Funding is from CMHC, with contribution from the Program for Energy Research and Development (PERD). The methodology is similar to that of a completed pilot project which studied the effect of renovating the homes for indoor air quality on the asthmatic condition of the occupants. This project will look at 20 case studies of moldy houses selected from different parts of the country and renovated by their owners. Remediation of the houses will incorporate measures to improve their energy efficiency. The output will be a research report that will be of interest to builders and renovators, the general public, the asthmatic population, researchers and physicians. The study should be complete by late 2003.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2157 0200001
STATUS : Ongoing

INDOOR ENVIRONMENT

RESEARCH CHAIR IN HEALTH AND INDOOR AIR QUALITY - CARLETON UNIVERSITY

CMHC is participating in an Industrial Research Chair in Health and Indoor Air Quality at Carleton University. The principal funding for this Chair is being provided by the Natural Sciences and Engineering Research Council (NSERC), Paracel Laboratories, Morrison Hershfield Ltd., Health Canada, Kingston General Hospital, Carleton University and CMHC. The Chair, in collaboration with its partners, will develop more rapid and cost effective methods for measuring the types and amount of mold in buildings and exposures of the occupants, construct a database of cultures of molds found in moisture troubled buildings, prepare purified extracts of the molds for allergy diagnostic tests and undertake studies of the effects of these molds on lung cells. The output from this Chair would have far-reaching benefits for the general population in the clinical diagnosis of mold allergy and the mitigation of mold contaminated buildings. A five year research program of the Chair is underway.

CMHC Project Officer : *Virginia Salares* | ***CIDN*** : 2269 0600
Division : Policy and Research Division | ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MANUFACTURED HOUSING

FEASIBILITY OF UTILIZING A PORTABLE HOUSING PLANT FOR SINGLE FAMILY DETACHED CONSTRUCTION

This External Research project is studying the economic feasibility of using an automated, mobile plant to produce houses that are 90-95% complete when they leave the plant. The plant would be erected in the subdivision where the houses are to be built (with basement foundations pre-installed), and once the construction program is complete, the plant would be dismantled and shipped to the next locale. A draft final report has been received (summer 2002), and the final report is expected in the fourth quarter of 2002.

CMHC Project Officer : *Chris Ives* | ***CIDN*** : 2305 0200004
Division : External Research Program | ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MANUFACTURED HOME DESIGN AND LAND LEASE COMMUNITY PLANNING

The purpose of this project is to explore various innovations in land use, infrastructure and unit design in manufactured home land lease communities across Canada. The intention is to demonstrate that not only can land lease communities be leaders in infrastructure innovation as well as providers of high quality affordable housing, but that in any community when these issues are explored simultaneously, that savings from one area can offset extra costs in another. The first of several demonstrations which will make up this project will undertake and complete the design of a Tee or L shaped 'foldable' manufactured home with improved heat storage and thermal envelope and its related site planning, as well as initial planning and infrastructure investigations for future phases of a land lease community in Nova Scotia. Other projects will investigate two storey designs and the use of containerized infrastructure modules.

CMHC Project Officer : *Doug Pollard* | ***CIDN*** : 2444 0200001
Division : Policy and Research Division | ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MANUFACTURED HOUSING

MANUFACTURED HOUSING CONSULTANTS' TRAINING PROGRAM - PHASE II

This was a partnership project between the Canadian Manufactured Housing Institute (CMHI), the Provincial Manufactured Housing Associations of B.C., Alberta and Saskatchewan, Ontario and Atlantic Canada, and CMHC. The purpose of this project was to build on and improve the two day Manufactured Housing Consultants' Training Program and to ready it for ongoing delivery at the provincial level. The training program, which was developed under Phase I, covers a broad overview of the many aspects of the manufactured housing sales function. Topics include product and process knowledge, such as factory construction, zoning regulations, siting options, and transportation and installation procedures. Under Phase II, the participant's manual and the trainer's material were revised to incorporate improvements resulting from the pilot program, and new additional information such as: information for modular retailers, participants workbook, and marketing and promotional materials. These changes were necessary to ensure a high level of quality, effectiveness and consistency of the course delivery by the various provincial industry associations. This work has been completed and a number of courses have been offered with outstanding success. The program is being delivered through a partnership arrangement with provincial associations/organizations and is open to all representatives of the manufactured housing industry in Canada.

STATUS : Completed
AVAILABILITY : Seminar/training is available

MOISTURE AND MOLD

CLEANING UP YOUR HOUSE AFTER A FLOOD AND CLEAN-UP PROCEDURES FOR MOLD IN HOUSES

Two CMHC publications, "Cleaning Up Your House After a Flood" and "Clean-up Procedures for Mold in Houses", are undergoing revision. These documents have been widely used since 1993. The revision will incorporate the most up-to-date information on dealing with mold and provide steps for homeowners to follow in assessing and fixing the problem.

CMHC Project Officer : *Virginia Salares*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2447 0200001
STATUS : Ongoing

DEFINING PERFORMANCE OF WATER RESISTIVE BARRIERS

Water Resistive Barriers (WRB), also known as sheathing membranes, fulfill many critical functions in the building envelope, but the means to evaluate their field performance has not been adequately developed. This is a pilot project that aims to define the key elements affecting performance of WRB in stucco systems with a view to pursuing the following objectives:1. Develop adequate experimental characterization of likely WRB field performance.2. Define WRB characteristics needed for input into advanced Heat Air and Moisture (HAM) models.3. Examine probable long-term performance of WRB and in particular, study the effect of chemical leaching from stucco products and wood based materials.4. Compare the results of wetting and drying predicted by advanced HAM models with experimental results.

It is expected that helping manufacturers and users of breather-type moisture barriers define the performance of such materials in both conventional and rainscreen walls will lead to better differentiation between applications of different WRB products as well as in development of new products.

The External Moisture Control (EMC) Consortia, comprising Canada Mortgage and Housing Corporation, the Homeowner Protection Office, E.I. Dupont de Nemours Inc., Fortifiber Corporation, and HAL Industries are funding this project. The study is being performed at Concordia University. Completion of the project is expected by spring 2003.

CMHC Project Officer : *Silvio Plescia*	***CIDN*** : 2490 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

GUIDELINES FOR MOISTURE MANAGEMENT IN EXTERIOR WALL SYSTEMS

CMHC is providing financial and technical support to NRC/IRC to develop guidelines for moisture management strategies for exterior wall systems. The guidelines will address user requirements for long-term performance and durability of wall systems for the wide range of climate zones across North America.

CMHC Project Officer : *Silvio Plescia*	***CIDN*** : 2199 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

GUIDELINES FOR ON-SITE MEASUREMENT OF MOISTURE IN WOOD BUILDING MATERIALS

Builders, inspectors and engineers undertaking moisture measurements on site in many instances do not possess the necessary background for using or interpreting moisture meter readings from wood and wood-based products. Because judgement is also needed in their interpretation, this document has been prepared to provide both detailed instructions and background information to assist persons involved in these endeavours. The objective of this report is to assist those not fully informed in wood moisture measurement technology and to provide general guidance with respect to measuring wood moisture content in field conditions. The document outlines the types of available moisture meters, a process of how to take moisture readings, where to take moisture readings and how the moisture readings are corrected for temperature and wood species. In addition, the document will provide a general discussion about steps builders and designers can take to minimize construction complications due to moisture.

Prepared by Forintek Canada Corp. Sponsored by Canada Mortgage and Housing Corporation and Canadian Wood Council. Ottawa: CMHC, c2001. 1 CD-ROM

STATUS : Completed CD-ROM

AVAILABILITY : Canadian Housing Information Centre

IMPROVEMENTS TO THE MOISTURE PERFORMANCE OF PRESERVED WOOD FOUNDATIONS

Previous work by Forintek, the wood industry research agency, has established that the bottom plate of preserved wood foundation walls is very often over 20% moisture content. The wood preservatives generally prevent this relatively high moisture content from causing any degradation in structural strength. However, it is possible that the wet plate will transfer moisture to the insulated cavity above. This may lead to the development of mold in the wall cavity. The objective of this research project was to retrofit a mold troubled Ottawa area preserved wood foundation to validate a practice for reducing a high moisture level and mold within the PWF cavity. The demonstration house has been modified by using fans to ventilate the lower part of the wall cavities. Wood moisture levels were monitored through 2001. The remediation was successful at preventing noticeable levels of mold in the cavities or the house air during the monitoring period. Data analysis continues to quantify the actual reductions in wood moisture levels.

CMHC Project Officer : *Don Fugler* — ***CIDN*** : 2419 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL ASSEMBLIES - COQUITLAM, BC

Wood framed buildings in the Vancouver area have experienced excessive moisture damage to the sheathing boards and wood framing over the past decade. This applied research project, funded by Canada Mortgage and Housing Corporation in partnership with Polygon Homes Ltd., involves the development of a building envelope diagnostic tool, specifically, an in-situ monitoring method to diagnose causes of moisture problems in low-rise wood-framed construction. This method is important to residential building owners as it can be used to develop cost effective remedial repair recommendations and to promote better design and construction guidelines for new buildings. This project's objective is to monitor the performance of the exterior wall assemblies of two, 46 unit four-storey buildings in Coquitlam, BC. Monitoring will be carried out for one full year, capturing the wall response to the range of climate loading conditions. Exterior walls, including interior living spaces as well as interstitial wall areas, will be monitored for temperature, relative humidity, wood moisture content and air pressure differentials. A weather station, mounted on the roof of one building will capture the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring of the buildings began in January 2001. Data collection will continue until the spring 2002. Project completion is expected before December 2002.

CMHC Project Officer : *Silvio Plescia* — ***CIDN*** : 2254 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IN-SITU MONITORING OF WOOD-FRAMED EXTERIOR WALL SYSTEMS - VANCOUVER, BC

Wood framed buildings in the lower mainland of British Columbia have experienced excessive moisture damage to both sheathings and framing materials. In recent years, with the adoption of Best Practice principles throughout the construction industry (by builders and developers, design professionals and various construction trades) coupled with regulatory amendments to the City of Vancouver building by-laws, a new generation of exterior wall assemblies incorporating a 'rainscreen' moisture management strategy has been constructed. How effective were these walls at managing the exterior moisture loads? The objective of this applied research project, funded by Canada Mortgage and Housing Corporation, is to monitor, assess and document the performance of a residential low-rise four storey, wood-framed building which incorporates rainscreen design technology, and to analyze data to determine the effectiveness of wood frame rainscreen wall assemblies at managing exterior moisture loads. Monitoring of interior, exterior and interstitial wall areas will include temperature, relative humidity, wood moisture content and air pressure differentials. A weather station mounted on the roof of the building will capture the local weather conditions: air temperature and relative humidity, wind speed and direction and rainfall. Monitoring will be carried out for one full year, capturing the wall response to the range of climate loading conditions. Project completion is expected in the spring of 2003.

CMHC Project Officer : *Silvio Plescia* — ***CIDN*** : 2254 0200002
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MOISTURE AND MOLD

MODIFY AND UPGRADE WALLDRY COMPUTER PROGRAM

This project's objective is to modify and upgrade WALLDRY, a computer program developed by CMHC, which models the flows of moisture, heat and air through wall assemblies. Project completion is expected by the fall of 2003.

CMHC Project Officer : *Silvio Plescia* **CIDN** : 2505 0200001
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

MOLD CLEANUP PROCEDURES: CONTRACTORS' GUIDE

A draft document for professionals on Mold Cleanup Procedures is under development by CMHC. The focus of the document is on information required by contractors involved in renovation and clean-up of mold contaminated houses. As a result of rapidly evolving knowledge in this field, the current draft of the document and its mold cleanup procedures are now being revised to incorporate more current and substantive information from authoritative sources. This document will address mold cleanup in general and will include information on the precautionary measures required to protect workers and occupants, and present best practices for mold remediation. A significant change in approach since preparation of the original draft is the expert consensus that mold remediation should be approached from the perspective of the size of visible mold area rather than the type or toxicity of the molds present.

CMHC Project Officer : *Virginia R Salares* ***CIDN*** : 2380 0200
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

NORTHERN HOUSING

COMPARISON OF NORTHERN HOUSING COSTS

This database includes every community in Labrador, Nunavik, Nunavut, NWT and Yukon. Using the Department of Public Works and Government Services National Master Specifications, this database outlines all components associated with the production of a northern home - from soft to hard, at both the house level and community level to determine which elements, in which locations are inordinately skewing costs. Through use of index communities (the shipping points of Edmonton, Winnipeg and Montreal), it permits comparison of housing costs from North to North, and from North to South. Launched in 2002, it will be annually updated. The operationalized database will permit future tracking and analysis such as life cycle performance costs; where use of local labour, indigenous materials and value-added processing of raw, local materials can be developed or expanded to reduce housing costs; and where capacity building may be of benefit. In 2002, much empirical data was not available, and statistically valid measures were used to calculate incomplete data. Over the next several years, through annual data collection, enough "hard" data will be entered to allow users to work from entirely real data. The Excel spreadsheets can be downloaded and the user can manipulate the data for their own uses.

CMHC Project Officer : *Aleta Fowler* ***CIDN*** : 2370 0200003
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

CONTINUATION OF NORTHERN VENTILATION STUDY

This project is a continuation of related CMHC research into ventilation needs and performance in northern homes. Adequate, appropriate and affordable means of ventilation and verification of manufacturer's claims need to be assessed, using an established, consistent methodology. Practical and effective options for ventilation are needed to alleviate potential health problems and building damage. The research report will be completed and published in 2002 or early 2003.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2420 0200002
STATUS : Ongoing

HEALTHY HOUSING IN THE NORTH: TOWARDS A NORTHERN HEALTHY HOUSE DEMONSTRATION PROJECT

This study is a review of the principles and technical information that can influence the realization of healthy and more sustainable housing in the North. The objective of this study is to begin addressing and enhancing the ecological sustainability, social appropriateness, and total (real) economic aspects of northern housing. The approach is to develop the concept of the Healthy House in a northern context.

People who design and construct housing in the North need to become more conscious of their impact on the environment, social structures and energy use. High environmental and dollar costs of fossil fuel energy in the North demand reconsideration of conventional building design, materials and technical systems. The need for repairing and reinforcing the social fabric calls for appropriate environmental and cultural design to create healthy and locally supported, self-sufficient northern communities. This study reviews and examines influences, aspirations, limitations and potential technical options for increasing sustainability in northern housing.

The study is divided into two parts. Part One is an overview of the northern context, ecological sustainability, social appropriateness, and total (real) economic aspects of northern housing. Part Two is a review of technical options and information resources.

The intent of this study is to encourage the inclusion of environmentally responsible Healthy House concepts, systems and materials in the design, construction, operation, and final disposal of housing. The study is intended for the use of decision-makers who can advance this goal and may include: homebuilders and buyers; community planners, architects, and engineers; regulators and administrators; and policy makers. Northern training institutions could also use the study to supply people with the knowledge and skills to create northern healthy housing solutions.

Ultimately, this study and its guidelines are intended to contribute to northern housing that is more ecologically sustainable and locally and socially appropriate during construction, in operation and at the end of service.

Written by Bob Bromley, Stephen Fancott, Bill Fandrick, Gino Pin. Additional writing by Donna Diakun. CMHC Project Manager: Aleta Fowler. Project Manager for Arctic Energy Alliance: Rob Marshall. Ottawa: Canada Mortgage and Housing Corporation, 2002. iii, 76 pages

NOTE: No. 02-126 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

NORTH WEB-SITE

The purpose of this web site is to present relevant Cold Climate technical information such as factsheets of research reports, databases and the Frostline newsletter. It also includes discussion groups to provide a means of ongoing and current communication including a bulletin board for up-coming events and links to other pertinent web-sites. The project partners are CMHC, Alaska Housing Finance Corporation (the host and sponsoring agency), NRCan (with their own portal), University of Alaska, Yukon Housing Corporation, NWT Housing Corporation and others. About to be launched, the site can be visited at http://www.NoRTH-RTHN.org.

CMHC Project Officer : *Aleta Fowler*	***CIDN*** : 2369 020001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet on the web	

NORTHERN HEALTHY MIXED-USE BUILDING DEMONSTRATION

This Yellowknife Demonstration is built upon a long line of research and is the necessary step in illustrating Healthy House principles and practices. This Demonstration will allow interested parties to view the performance and use of Healthy House components, permit informed choices for application in the North, nationally and internationally, and encourage more widespread adoption of Healthy House and better housing and community models. The demonstration will have a documented process for creation of a mixed-use, multistorey building which meets Healthy Housing objectives and resolves issues of higher upfront costs; site selection and land acquisition in the North; land ownership issues for a unique building; building tenure; Northern financing; Northern regulatory requirements; utility provision; and other pre-development considerations. The Demonstration will include an educational component and will be open to the public upon completion in 2003.

CMHC Project Officer : *Aleta Fowler*	***CIDN*** : 2471 0200002
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

NORTHERN LANDSCAPING: A GUIDE TO RESTORING THE PLANTS AND SOIL IN NORTHERN COMMUNITIES

This guide looks at ways disturbed northern soils, which are so common, can be made viable for plant growth - and subsequently, determines means of inducing plant growth in these disturbed areas. The guide is intended to help people in northern communities establish low-maintenance, "natural landscaping" appropriate to their region. The information will be useful to anyone involved in a community revegetation project including elected officials, contractors, schools and clubs, and other interest groups. It is not a guide to restoring contaminated sites, industrial sites, or for large ecological restoration projects. It is suitable for smaller-scale planting projects within communities. The emphasis is terrestrial (dryland) areas, though wetland (not fully aquatic) areas are also considered.

Natural landscaping involves the planting of a group of usually native species to meet some specific, aesthetic, management or design goals. Potential project sites are often already semi-natural, such as road embankments, stream edges, vacant lots or other community lands where the plants and soil were disturbed. Areas around homes and other buildings also have potential for natural landscaping. Planting new semi-natural areas which resemble the original ecosystems can beautify the community and produce other benefits, including:

-- creation of habitat for wildlife such as birds and squirrels;
-- reducing blowing dust;
-- protecting soils from erosion;
-- providing meaningful ways to educate about the natural environment;

-- fostering environmental awareness in a direct, hands-on, way;
-- building a sense of community by pursuing and achieving common goals.

Techniques described in this guidebook will help achieve these kinds of goals with little input of energy and resources such as water, fertilizers, and fuel, etc. once the revegetated area is established. A virtually self-supporting system is the goal.

Prepared by Avens Associates Ltd. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Aleta Fowler. Ottawa: CMHC, 2002. 87 pages

NOTE: No. 02-128 in the Research Highlights Technical Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

UPDATE THE NORTHERN UTILITY COSTS REPORT

This is a key baseline study. First done in 1996 by the NWT Housing Corporation, this updated work now includes all power, heat, water and sewage costs for each community in Labrador, Nunavik, Nunavut, NWT and Yukon. It includes the source of each utility (i.e. diesel generator versus hydro) and complete information on subsidized residential rates, commercial rates and full economic costs of each utility. This database is designed to work in conjunction with the Comparison of Northern Housing Costs database (to evaluate whole home costs) and the Alternative Home Energy Sources for the North database. By using the three databases together, the optimal residential and community-level service can be determined on a community by community, and residence by residence basis.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2467 0200001
STATUS : Ongoing

USE OF ON-SITE WASTE WATER RECYCLING MICROSYSTEMS FOR SPRINKLER SUPPLY

The high cost of northern housing, and housing insurance, may justify the installation of fixed automatic fire suppression systems. Conventional sprinkler systems require more water than is presently available in buildings and would entail substantial redesign. With microsystem technology, excess water of "swimming pool" quality is constantly produced which must be periodically pumped away, or disposed of on-site. This excess water could be easily stored for sprinkler use. In the North, loss of life due to fire is 10 times higher than in the South. Building loss, when a fire occurs, is nearly 100%. Most communities rely upon volunteer fire departments and upon reservoirs which have limited capacity. Alternatives are needed and this study will determine the means and feasibility of taking this next step. Research will be incorporated from CMHC's microsystem technology, National Research Council's Compressed-Air-Foam technology, Architectural and Community Planning's EcoNomad, the Canadian Residential Sprinkler System Association material, and the HydraTank technology, as well as conventional residential sprinkler systems studied in previous work by CMHC and the National Fire Laboratory. By determining a reliable supply of water for any of the sprinkler technologies, significant gains can be made in protecting Northern lives and buildings from fire. This feasibility work is expected in 2003.

CMHC Project Officer : *Aleta Fowler*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : N/A
STATUS : Ongoing

CONTRACT MANAGEMENT COURSE FOR RESIDENTIAL PROPERTY MANAGERS AND BUILDING OWNERS

This project will develop course content to provide an introduction to construction/contract management processes for residential property managers, building owners and anyone involved in the administration of multi-unit residential buildings. The course material will be as applicable to the management of major service contracts as it is to major construction works including repair, replacement and/or rehabilitation projects. Topics covered in this course include the different types of construction or service contracts, a discussion of the construction process, administering the tendering process, evaluating the tendered bids, contractor/consultant selection, bonding and insurance requirements, the building owners responsibilities and those of the contractor/consultant. This project should be completed by late in 2003.

CMHC Project Officer : *Silvio Plescia*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : N/A
STATUS : Planned

ECO-ASSESSMENT TOOL FOR PROPERTY MANAGERS OF MULTIPLE UNIT RESIDENTIAL BUILDINGS (MURBS)

The purpose of this project is to develop the MURB Tool with the objective of obtaining a self-assessment procedure which is easily accessible and which is relevant to Canadian property managers.

STATUS : Completed
AVAILABILITY : Product is available on the web

REVISIONS TO THE OPERATING GUIDES FOR OWNERS, MANAGERS AND CUSTODIAL STAFF

This project will revise, update, and make print-ready the publications presently known as the CMHC Multi-Residential Manager and Owner Maintenance Manuals. The publications provide best practices for property owners and managers and provide operational instructions for on-site staff.

CMHC Project Officer : *Duncan Hill*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2501 0200001
STATUS : Ongoing

TECHNICAL AUDIT COURSE FOR PROPERTY MANAGERS

This project, funded by Canada Mortgage and Housing Corporation in partnership with the Real Estate Institute of Canada, aims to develop a course for property managers on the technical audit of high-rise residential buildings. Using a building as a system approach, this course will provide property managers and building owners with a perspective of the interaction of all building systems and components. Such training is not available to residential property managers in Canada. Technical audits, an organized review of building systems, are an effective way to assess the condition of a building, to understand how the building is performing and to provide a sound basis for making maintenance, repair and upgrade decisions. The course provides the property manager with insights into the technical audit process and highlights the requirements for undertaking technical audits of residential buildings including the scope of the work and the consultant qualifications. The course also introduces the fundamental principles of building science to

PROPERTY MANAGEMENT

encourage holistic solutions to building problems. The course documents are expected to be completed by end of 2002.

CMHC Project Officer : *Silvio Plescia*
CIDN : 2297 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RENOVATION AND INSPECTION

CANADIAN HOME INSPECTORS AND BUILDING OFFICIALS NATIONAL INITIATIVE - PHASE II

With the successful completion of the first phase of this multiphase project, which was to develop national occupational standards for the private home inspection and municipal building code inspection sectors, the Canadian Home Inspectors and Building Code Officials are now preparing for Phase II which is to use the occupational standards to:

- conduct a gap analysis to identify any curriculum and training needs;
- develop curriculum and training programs to meet their needs;
- identify a certification and accreditation model that could be adopted for their industry sectors;
- establish an accreditation program for institutions delivering training programs.

This project is supported by the private and public inspection industry sectors, Human Resources Development Canada (HRDC) and CMHC. A proposal has been developed and submitted to HRDC requesting their continued assistance with Phase II. It is anticipated that Phase II will commence in November, 2002 and will be completed by March, 2004. Following the completion of Phase II, the two sectors should be in a position to implement the certification and accreditation programs for their respective industry sectors under Phase III. The private home inspection industry has recently established a national association to represent their industry, i.e. Canadian Association of Home and Property Inspectors (CAHPI).

CMHC Project Officer : *Darrel Smith*
CIDN : 1962 0200002
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : There will be no product for this project

HIRING A HOME INSPECTOR. ABOUT YOUR HOUSE; CE35

This fact sheet offers helpful guidance to consumers on questions to ask and what to look for when in the market for a qualified home inspector. The fact sheet was done in consultation with the private home inspection industry through members of the Canadian Association of Home and Property Inspectors (CAHPI) as well as through home and property inspector members of the Canadian Home Inspectors and Building Officials Committee. The fact sheet includes information on the following:

- current situation (who is out there and what regulations exist);
- CAHPI's national initiative (purpose and objectives);
- services provided by home inspectors and why they are needed;
- questions to ask and what to look for when hiring a home inspector; and
- what to expect (time involvement, cost, written report).

Ottawa: Canada Mortgage and Housing Corporation, 2002, c2001. 4 pages

Note: Aussi disponible en français sous le titre : Le choix d'un inspecteur en bâtiment

STATUS : Completed fact sheet. Order number: 62839
AVAILABILITY : CMHC Information Products and on the CMHC web site

HOMEOWNER'S INSPECTION CHECKLIST

The "Homeowner's Inspection Checklist" is aimed to help consumers conduct an inspection of their home to identify problems or potential problems. It will help identify symptoms, cause and cures for common problems in homes. This book is not a comprehensive inspection manual, nor will it replace an examination by a qualified home inspector. It will help determine if a thorough inspection is needed, it you can repair a problem yourself, or if you should consult a professional tradesperson or contractor. The "Homeowner's Inspection Checklist" will also help you assess how a home measures up according to the principles of Healthy Housing occupant health, energy efficiency, conservation of resources, environmental impact and affordability. A maintenance calendar at the end of this book is a weekly guide to routine tasks.

Prepared by Ted Kesik. CMHC Project Officer: Darrel R. Smith. Ottawa: Canada Mortgage and Housing Corporation, 2002. 107 pages

Order number: 62114 **Price: $19.95 + GST and handling charges

NOTE: Aussi disponible en français sous le titre : Guide d'inspection du propriétaire-occupant

STATUS : New Completed Report

AVAILABILITY : CMHC Information Products

MANDATORY HOME INSPECTIONS ON RESALE HOMES IN ONTARIO

A CMHC External Research Program (ERP) grant was awarded to research the issue of mandatory home inspections for resale homes in Ontario with a number of housing industry interest groups. The research was to determine why this requirement was never imposed in the past, the pros and cons of enacting such a requirement in the future, and how could such a requirement be enacted and by whom. The study also investigated if the existing home inspection industry could handle the increased capacity of such a requirement. The research is completed and the final report is anticipated to be available by late 2002.

CMHC Project Officer : *Darrel Smith*

Division : External Research Program

AVAILABILITY : Product is not yet available

CIDN : 2437 0200015

STATUS : Ongoing

MERGE THE EXISTING NATIONAL AND PROVINCIAL ASSOCIATIONS INTO ONE NEW NATIONAL ENTITY TO REPRESENT THE PRIVATE HOME AND PROPERTY INSPECTION INDUSTRY ACROSS THE COUNTRY

The objective of this project was to assist the private home and property inspection industry as it merges the existing national and provincial associations into one new national entity, i.e. the Canadian Association of Home and Property Inspectors (CAHPI). CAHPI will represent the private home and property inspection industry across the country. On behalf of CAHPI and the Canadian Association of Home Inspectors (CAHI), a consultant facilitated a planning process and developed a strategy outlining the necessary steps for the orderly progress of this merger into CAHPI. This project is complete and industry is implementing steps for merging their associations.

STATUS : Completed

AVAILABILITY : There will be no product for this project

RECYCLE: LIFECYCLE - HOW TO RENOVATE A HOME FOR CHANGE

This project's purpose objective is to provide develop a set of design strategies for adaptable renovations involving a variety of common, detached housing types. The goal objective of these strategies is will be to inform homeowners, or prospective homeowners, about how they could, through alterations or additions to their homes, through alterations and additions of ways to achieve the greatest flexibility through alterations and additions to their houses meet their changing needs.

CMHC Project Officer : *Thomas Parker* **CIDN** : 2437 0200014
Division : External Research Program **STATUS** : Ongoing
AVAILABILITY : Research highlight is not yet available

RENOVATING DISTINCTIVE HOMES: ONE-STOREY HOUSES OF THE '60S AND '70S

This publication will lead the homeowner through an energy efficient, healthy renovation. The document highlights floor plan changes and repairs that are particular to sixties and seventies bungalows, as well as including general guidance on renovation planning and how to hire a contractor. There are also details in the publication on how to make these forty year old houses more energy efficient, healthier for occupants, and suitable for people with limited mobility. The advice considers occupant lifestyle and needs, structural and maintenance requirements, "Healthy Housing" improvements (including environmental and energy-efficiency), and the impact on home equity and resale value.

Ottawa: Canada Mortgage and Housing Corporation, 2002. 88 pages

Order number: 62805 **Price: $14.95 + GST and handling charges

Note : Aussi disponible en français sous le titre : La maison réinventée: rénovation des bungalows des années 60 et 70

STATUS : New Completed Report
AVAILABILITY : CMHC Information Products

REVISION OF HOME CARE: A GUIDE TO REPAIR AND MAINTENANCE

The purpose of this project was to do a major update and revision of Home Care: A Guide to Repair and Maintenance. As part of the revision, the publication titled New Life for an Old House, which is no longer in print, was also reviewed and where appropriate the information on home repair was incorporated into Home Care to produce one comprehensive home maintenance and repair guide. The revised publication includes information from recent research and new topics on home repair (not renovation), home maintenance, and Healthy Housing as part of the update. The content emphasizes Canadian issues whenever possible to differentiate it from similar American products. A steering committee comprised of First Nations members, a home inspector and CMHC staff was established to help guide the consultant and review the material. The new publication is anticipated to be available by early 2003.

CMHC Project Officer : *Darrel Smith* **CIDN** : 2516 0200002
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

TRANSFORMING YOUR PRACTICE: INTEGRATED DESIGN CHARRETTES FOR SUSTAINABLE BUILDINGS: TORONTO CHARRETTE RESULTS

This charrette took place in Toronto, at the City of Toronto's Metro Hall, November 7th and 8th, 2001. The objective of the Toronto Charrette event was to use the integrated design process (IDP) to push the boundaries of building performance towards more sustainable practices. the sessions were intended to take a varied complement of professionals through an integrated design process in the context of a new project, so that they would "learn by doing" and be able to use IDP within their own practice.

Four partners supported Canada Mortgage and Housing Corporation in this event:
-- Enbridge Consumers Gas,
-- City of Toronto's Better Buildings Partnership,
-- Natural Resources Canada's Office of Energy Efficiency, and the
-- Canadian Energy Efficiency Alliance.

The goals of the partners were to:
-- Establish a forum where a multi-disciplinary group of design professionals could work together on a sustainable design project,
-- Gain insights into sustainable building practices, and
-- Learn how to advance building performance, starting from design conception to understanding of operations issues, building on each others' unique perspectives and expertise.

This document discusses the integrated design process and reports on the results of the charrette.

Prepared by IndEco Strategic Consulting Inc. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Sandra Marshall. Toronto: IndEco Strategic Consulting Inc., 2002. 96 pages

STATUS : Completed Report

AVAILABILITY : On a loan basis from: Canadian Housing Information Centre

WATER CONSERVATION, REUSE & MANAGEMENT

BUYING A TOILET. ABOUT YOUR HOUSE; CE 39

This 4 page fact sheet is aimed at consumers and provides information and advice on buying a toilet. It covers where toilets can be purchased, the average cost, outlines the differences between 6 litre and 13 litre toilets, touches on legislation, warranties, and rebates, and discusses important factors to consider in the purchase of tanks, flappers, fill valves, and toilet bowls. The fact sheet advocates the use of 6 litre toilet models to help lower water bills, reduce strains on water supply and wastewater collection infrastructure, and improve the environment.

Ottawa: Canada Mortgage and Housing Corporation, 2002. 4 pages

NOTE : Aussi disponible en français sous le titre : L'Achat de toilettes

STATUS : New Completed Fact Sheet. Order no. 62935

AVAILABILITY : CMHC Information Products and available on CMHC's web site

CASE STUDIES OF WATER CONSERVATION INITIATIVES IN MULTIS

CMHC, in partnership with City of Toronto Better Buildings Partnership, will document case studies of water conservation retrofits for multi unit residential buildings. The building profile, water conservation measures, costs and resulting water and energy savings will be described. The studies will serve as examples to encourage water use efficiency in other building and will appear on CMHC's website.

CMHC Project Officer : *Catherine Soroczan*
CIDN : 2239 0200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

DUAL FLUSH TOILET PILOT PROJECT

This project is now complete - results indicate that dual flush toilets perform well in comparison to 6L and 13L toilets based on water consumption rates, saving an average of approximately 26% more water than single flush 6L toilets when used in replacement programs. Despite some complaints about bowl streaking, all survey respondents indicated that they liked the dual flush option. A further study has been initiated based on the findings of CMHC's work. Durham region is currently evaluating 10 newly installed dual flush toilets in a seniors' complex the results of this work will be available in 2003.

CMHC Project Officer : *Catherine Soroczan*
CIDN : 2336 0200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

ECONOMIC FEASIBILITY STUDY OF WATER REUSE AND TREATMENT TECHNOLOGIES

The purpose of this project is to undertake and complete an economic feasibility study of water reuse and treatment technologies. The contractor will assess ten case studies of on-site water reuse applications. The final draft has been received and the case studies will be uploaded to the CMHC water website on a monthly basis. Further attention is being paid to the financial aspects of water reuse and full costing.

STATUS : Completed
AVAILABILITY : Product is available on the web

MAXIMUM DAY WATERING DEMAND PHASE II - ASSESSMENT OF WATER CONSERVATION STRATEGIES

This project's objective is to determine the impact of the Household Guide to Water Efficiency on indoor and outdoor water consumption. Specifically it will seek to address the questions: Is the impact on consumer behaviour maintained in the long term, what effect does the Guide have on outdoor water use during the summer months, and what extra impact does a complementary social marketing campaign have on consumer behaviour? This work is part of the second phase of the Max Day project initiated in 2000, which saw a reduction in consumption rates based on conservation method used.

Although not conclusive, the data analysis indicates that demands were reduced in the two study areas after the related programs were implemented. The data related to the Survey Area was not conclusive as there was almost no irrigation subsequent to the survey being performed. It appears that the distribution of the Household Guide to Water Efficiency was responsible for a savings of between 34-54 litres per household per day (combined indoor and outdoor use). The analysis also shows that the "Drop-Off" and "Phone" methods of delivery had cost-benefit ratios of .39 and .37 respectively i.e. both methods are more than twice as cost-effective as infrastructure expansion. The widely fluctuating irrigation demands during the summer of 2001 make it difficult to accurately assess the effectiveness of the three methods of distributing the Household Guide to Water Efficiency. The analysis was further complicated by the implementation of a watering ban during the monitoring period. A follow-up analysis was undertaken during the summer of 2002. The results of this will be available by Winter 2002.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 2341 0200003
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PERFORMANCE ASSESSMENT OF LOW FLOW TOILETS

This project's objective is to set up and conduct a monitoring program to verify the flush volumes of 6-litre Ultra Low Flow (ULF) toilets installed in single-family homes as part of Durham's retrofit program. Results indicate that depending on the brand of toilet installed there is a mixed reaction to ultra low flow technology.

STATUS : Completed **AVAILABILITY :** Product is available on the web

REMOTE MONITORING AND CONTROL OF ON-SITE WASTEWATER TREATMENT, RECYCLING AND RE-USE SYSTEMS

This External Research Project addresses remote monitoring and control of systems for on-site wastewater treatment, recycling, and re-use. Effective, reliable, and long-term performance of even the simplest of these systems requires at least periodic monitoring, and the most sophisticated systems require continuous monitoring and control capability.

There are two objectives to this research:
1. To produce a resource document for multi-stakeholders: planners, managers, regulators etc. who have interests or responsibilities related to systems for on-site wastewater treatment, recycling, or reuse; and
2. To produce a supplementary document that will propose ways in which the contents of that document can be communicated most effectively to those users.

An interim report has been received and is being reviewed.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 2437 0200020
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SAFE EFFLUENT WASTEWATER RECOVERY SYSTEM (SEWRS)

This project is focusing on greywater systems for single family homes. Although the performance data collection will be for homes in southern Ontario and thus be not directly to the more northern parts of Canada, the final report will address changes required in these systems for application in the colder climate of the North.

CMHC Project Officer : *Catherine Soroczan* ***CIDN*** : 2437 0200022
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

WATER AND SEWAGE HANDLING SYSTEMS IN NORTHERN AND REMOTE COMMUNITIES

This project's objective is to collect and publish in fact sheet format the following information on water and sewage handling systems in northern and remote communities: description of the technology and construction, engineering application and performance, capital and operating costs and any available user case studies. It is proposed that this project include the demonstration and monitoring of 6-10 "EcoSeptic" micro-sewage systems in a northern Ontario or Manitoba community with severe pollution problems that is willing to consider less costly alternatives to conventional sewage infrastructure. A suitable test site/community for the demonstration of "EcoSeptic" micro-sewage systems has not yet been secured. However another developer of an innovative micro-sewage system has secured five test installations in southern Ontario and Quebec. It is planned that these systems will be monitored for a period of at least eighteen months.

CMHC Project Officer : *Chris Ives* ***CIDN*** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

WATER EFFICIENCY CASE STUDIES

The purpose of this project is to develop six case studies focusing on specific residential water efficiency initiatives that are being delivered by six cities across Canada. Final product will be available on the web site.

CMHC Project Officer : *Sandra Baynes* ***CIDN*** : 2239 0200004
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet on the web

WATER QUALITY MONITORING OF THE TORONTO HEALTHY HOUSE

The purpose of this project is to undertake the collection of water samples along various points from the Toronto Healthy House Water Reuse System and have them analyzed for a number of water quality parameters. Monitoring is underway and is scheduled for completion late 2002.

CMHC Project Officer : *Catherine Soroczan, Sandra Baynes* ***CIDN*** : 2337 0200002
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

SOCIO ECONOMIC RESEARCH

ADAPTATION OF POTENTIAL HOUSING DEMAND MODEL TO ABORIGINAL COMMUNITIES - AN EXAMPLE

This study will build on the results of a feasibility study that looked at the application of CMHC's potential housing demand model in Aboriginal communities. It will take the recommended actions and apply them to a test case of the Nishnawbe Aski Nations (NAN), a grouping of 49 bands in Northern Ontario. Some specific tasks will be: to monitor the degree of difficulty that NAN administrators encounter in gathering accurate input data, to refine the assumptions on headship rates and household types that will be parameters for the model. Eight communities from NAN will be piloted in a first phase, and if successful, the other communities will follow as Phase 2.

CMHC Project Officer : *Phil Deacon* **CIDN** : N/A
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

ALTERNATE ABORIGINAL TRAINING DELIVERY OPTIONS

Recent experience has shown the need to explore alternate approaches to the delivery of training to First Nations (FN) and other Aboriginal communities. A current study is looking at the feasibility for these communities to share training expertise and resources; and a number of promising approaches are being identified, which could supplement some current approaches.

This study will examine promising approaches to share training expertise and resources, how logistics could work, and the sort of pay backs that the trainer or "training community" could expect. It is hoped that the results will point to new directions which might provide for a more efficient use of available resources and support capacity development.

CMHC Project Officer : *Marcelle Gareau* **CIDN** : 01PLO-8426
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

COMMUNICATIONS & INFORMATION TRANSFER STRATEGY FOR ABORIGINAL GROUPS

The goal of this project was to develop a communications and information transfer strategy that will help CMHC in its interactions with Aboriginal housing groups regarding capacity development, research and information transfer activities. To be effective, information has to reach the audience that matters and be in formats that have the maximum impact.

The study looked at the barriers to finding and using housing related information, what makes housing related information relevant, what are key influences, and how effective are the available communications vehicles and distribution channels, all in regard to Aboriginal audiences.

The project consisted of: an assessment of existing communication strategies and marketing research in the area of housing information and training; personal or telephone interviews with senior officials of key national and provincial stakeholder groups; group discussions with a broad range of the key client groups as defined in target audiences; and development of alternative communications and information transfer strategies for CMHC and assessment of their relative costs.

The target audience for this project is made up of: key decision makers in housing operations and policies, provincial organizations chosen to give regional coverage, major national organizations, and regional CMHC program officers.

The geographic coverage is Canada wide. All types of Aboriginal community, on or off-reserve in rural, remote and urban communities are included.

Prepared by Poirier Communications. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Philip Deacon . S. l.: Poirier Communications, 2000.
2 volumes: vol. 1 Final Report (130 pages); vol. 2: Dialogue Circle Transcripts (85 pages)

STATUS : Completed Report
AVAILABILITY : On a loan basis from: Canadian Housing Information Centre

EFFECTS OF URBAN ABORIGINAL RESIDENTIAL MOBILITY AND SERVICE PROVISION

This project's objective is to examine the effects of urban Aboriginal residential mobility upon the provision of public and private services provision, in areas such as (the) housing, education and health care (sectors).in the Census Metropolitan Areas of Regina, Saskatchewan and Winnipeg.

This project will examine the effects of Aboriginal urban mobility upon service provision in areas such as housing, education, and health care in both the private and public sectors. The project is aimed at examining the effects of Aboriginal urban mobility upon the provisions of services to Aboriginal people in Winnipeg and Regina.

CMHC Project Officer : *Marcelle Gareau*
CIDN : 2436 0200
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

EXAMINING INUIT SPACE USE IN EURO-CANADIAN HOUSE FORMS

This project is intended as the initial phase of a long term investigation of Inuit spatial behaviour in Euro-Canadian type housing . The main objective is to find out whether this type of housing is meeting the needs and preferences of users.

CMHC Project Officer : *Marcelle Gareau*
CIDN : 2437 0200019
Division : External Research Program
STATUS : Ongoing
AVAILABILITY : Product is not yet available

FIRST NATIONS HOUSING PROPERTY MANAGEMENT TRAINING COURSES AND RESOURCES

This project's objective is to undertake and complete the identification and assessment of First Nations housing property management training courses and resources and provide recommendations for a comprehensive curriculum and innovative approaches to delivery in remote communities.

CMHC Project Officer : *James A Rockwood*
CIDN : 2374 1500001
Division : Assisted Housing Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

INVESTIGATING AND DOCUMENTING FIRST NATION TECH SERVICES INSTITUTES

The objective of this project is to undertake the profiling of two provincial First Nation technical services organizations for the purpose of documenting organizational success factors in a user-friendly framework.

CMHC Project Officer : *Alain Croteau*
CIDN : 2475 1500002
Division : Assisted Housing Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

MEASURING RESIDENTIAL MOBILITY OF URBAN ABORIGINAL PEOPLE

This pilot study provides information about how a survey methodology can be used to identify patterns of residential mobility among urban Aboriginal populations. The objectives of this pilot study were to design and test such a survey methodology, not to support statistically significant inferences for Aboriginal populations in urban centres. A questionnaire was developed and tested with a sample of 144 Aboriginal respondents living in two urban centres -- Toronto (73) and Winnipeg (71). The sample included respondents from First Nations (96), Métis (40), Inuit (4) and other Aboriginal groups (4). Fourteen Aboriginal organizations in the two selected cities identified respondents, the majority of whom were women, and participated in the survey administration. Information was gathered between November, 1999 and January, 2000 using in-person interviews, telephone interviews and self-administered questionnaires.

Substantive issues dealt with general topics such as residential migration and mobility, frequency and duration of homelessness, current and projected housing needs, empirical linkages and diversity (gender, income, employment, education) of the study population. Survey design issues dealt with Aboriginal consultations, representative pre-testing, literacy and survey administration methods. Respondents took an average of 35 minutes to complete the pre-test version of the questionnaire. The section on Moves (Migration and Mobility) provided the greatest recall challenge for respondents.

The pilot study demonstrated that details of past moves can be tracked, within limits. The survey tracked up to three moves within a five year time period based on respondent recall. Field team reports indicate this horizon may be the practical limit of accurate recall. Some data quality problems were associated with questions such as changes in household type and size. The pilot survey explored the reasons and motivations behind the moves of Aboriginal people living in urban areas -- what some experts characterize as "push" and "pull" factors. While very preliminary, the pilot survey results were broadly similar to the results of the 1991 Aboriginal Peoples Survey (APS) which showed that family, employment, housing and education are the major reasons for moving. The pilot survey also successfully identified reasons for moves, using questions or probes to identify different types of housing-related reasons for moves. Reasons differ for in-city (mobility) versus to-city (migration) moves. Housing was a bigger factor for in-city moves while work and education were more important for people moving across city boundaries.

The pilot survey explored in some detail housing-related reasons for moving such as affordability, better quality, and housing that better suits household needs. Cumulatively, these different housing-related factors were identified by almost two-thirds of respondents as underlying their most recent move. This is much higher than the percentage of respondents to the APS who identified housing as a factor in either migration or mobility.

Prepared by Turtle Island Associates. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Philip Deacon. Ottawa: CMHC, 2002 printing. (Aboriginal Housing Series) 86 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

ABORIGINAL HOUSING

ON-RESERVE COMPONENT OF THE RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP PHASE III)

The purpose of this project is to conduct an evaluation of the on-reserve component of the Residential Rehabilitation Assistance Program (RRAP) Phase III.

CMHC Project Officer : *Patricia Streich*	***CIDN*** : 2785 0501003
Division : Audit and Program Evaluation Services	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	***NEW***

URBAN ABORIGINAL PERCEPTIONS OF ACCESS TO HOUSING

The objectives of this project are: 1) To obtain baseline data on the nature and extent of discrimination in housing that Aboriginal people experience - case studies focus on Winnipeg and Thompson, Manitoba. 2) To quantitatively and qualitatively examine the key variables associated with housing discrimination for Aboriginal people, including such factors as residential migration/mobility, social cohesion, and ethnic clustering.3) To explore the effect that discrimination in housing for Aboriginal people has with regard to other victimization. This will be done by comparing the housing related factors to a more general survey of victimization (National Community Victimization Project) being carried out by Simon Fraser University with a SSHRC grant.

CMHC Project Officer : *Phil Deacon*	***CIDN*** : 1990 0200001
Division : Policy and Research Division	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CHILDREN·S ENVIRONMENTS

HOUSING FORM AND QUALITY IN RELATION TO CHILDREN'S MENTAL HEALTH

This External Research Project (ERP) will examine whether housing form and quality are related to the socio-emotional health of children. It will use standardized measures of housing quality and mental health, two major housing forms (single family and low-rise cluster), and will consider the role of various potentially moderating influences, including socioeconomic status and indoor population density to answer the basic question: "How, if at all, does housing form and quality affect the socio-emotional health of urban Canadian children."

CMHC Project Officer : *Fanis Grammenos*	***CIDN*** : 2437 0200013
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

CONCEPT OF A QUALITY LOCATION AND THE CENTRAL DISTRICTS OF MONTRÉAL

The primary scope of the proposed research will be to develop an approach based on sustainable development and aimed at better evaluating the capacities of an urban area to enhance its living conditions. In so doing, we believe that the proposed approach will support any measures to establish more effective guidelines for the improvement of these capacities.

CMHC Project Officer : *Paul Cardinal*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2437 0200008
STATUS : Ongoing

REQUALIFICATION OF SUBURBS AND REGULATORY FRAMEWORKS: CURRENT SITUATION AND EASING MEASURES

The objectives of this study are, first, to analyze the current regulatory frameworks that could support proposals for the requalification of Quebec suburbs and, second, to propose measures that could be introduced to make it easier for these districts to adapt to the social and physical changes that they are undergoing.

CMHC Project Officer : *Philippe LeGoff*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2437 0200018
STATUS : Ongoing

WHY CITIES MATTER: POLICY RESEARCH PERSPECTIVES FOR CANADA

The objective of the research was to assess existing knowledge of the ways cities matter in an era of globalization, identify common themes from the literature and existing policy networks and propose future directions for policy research and action at the community as well as the regional and national levels.

Contrary to predictions of the "locationless" effects of virtual communications and the "death of distance", urban centres have become more - not less - important as places where people live, work and play. Yet, experience shows that cities can be both engines of national prosperity and locales where the risks of social exclusion and environmental degradation exist. Better understanding is required of the factors that will sustain vibrant Canadian cities and healthy communities in a global age. This project examined these issues in the literature, through existing policy and networks and through a roundtable.

The first part of the paper traces the complex economic, social and political transformations that have put Canadian cities back on the agenda of policy communities. Choices must be made about how our urban spaces will be managed, whether investments will be made in human resources and physical infrastructure of cities and what new fiscal tools and financing mechanisms will be available to municipalities. The second part of the paper provides historical perspective on these challenges and choices and shows that the present day is not the first time that such fundamental questions have surfaced about cities and their role in national life. The third part of the paper maps four distinctive frameworks for mobilizing and advancing strategies to regenerate Canadian cities. These are: economic cluster; social inclusion; community economic development; and environmental sustainability. The major political challenge is to bring these respective advocacy networks together into a workable policy mix. The fourth part of the paper addresses the possibilities for progress, connecting a vision of community-based regionalism to the fundamental questions of urban governance.

CITY PLANNING AND HUMAN SETTLEMENTS

Given the increasingly important role of cities in shaping the country's economic, social and environmental well-being, Canada's new urban agenda must better align federal, provincial and municipal policies with the physical design and community planning of the country's diverse city-regions.

Prepared by Neil Bradford. Ottawa: Canadian Policy Research Networks, 2002. (CPRN Discussion Paper no. F/23.) viii, 86 pages

STATUS : New Completed Report
AVAILABILITY : Available on the web site of Canadian Policy Research Networks

CONSUMER PROTECTION

ISSUES PAPER ON LIABILITY IN HOUSE CONSTRUCTION

This project's objective is to produce a paper discussing the issue of liability in housing construction across Canada and identify who is and is not liable.

CMHC Project Officer : *Mark Holzman*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 1920 0200001
STATUS : Ongoing

RE-SALE OF LEAKY CONDOS: DID THE BUYER KNOW?

The purpose of this project is to ascertain if the tools prescribed in the Contract of Purchase and Sale adequately protect buyers in the re-sale transaction of condominiums in BC. If the tools are ineffective, what types of problems do they fail to detect? Is the lack of transparency due to failure of the tools, failure of the agent to include clauses mandating the tools, or some other reason?

CMHC Project Officer : *Anand Mishra*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2525 0201001
STATUS : Ongoing

COOPERATIVE AND NON-PROFIT HOUSING

2001 COOPERATIVE HOUSING SURVEY

The purpose of this project is to complete the required inspections under the 2001 cooperative housing survey, prepare reports and submit completed reports to the survey consultants.

CMHC Project Officer : *Allan Dobie*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available
CIDN : 2439 0501002
STATUS : Ongoing

COOPERATIVE HOUSING PROJECTS IN DIFFICULTY

The purpose of this project is to analyze the causes of cooperative housing projects being in difficulty.

CMHC Project Officer : *Graham Murray*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available
CIDN : 2485 0500008
STATUS : Ongoing

COST OF COOPERATIVE HOUSING

The purpose of this project is to conduct a study of the cost of cooperative housing.

CMHC Project Officer : *Graham Murray*
CIDN : 2439 0501001
Division : Audit and Program Evaluation Services
STATUS : Ongoing
AVAILABILITY : Product is not yet available

EVALUATION OF COOPERATIVE HOUSING

The objective of this project is to conduct surveys for an evaluation of cooperative housing. Original data will be gathered from surveys of occupants of cooperative housing projects (and of occupants of other housing types for comparative purposes), from members of boards of directors and managers of housing projects, and from portfolio managers. In addition, an inspection of housing conditions will be completed by professional building inspectors.

CMHC Project Officer : *Graham Murray*
CIDN : 2485 0500001
Division : Audit and Program Evaluation Services
STATUS : Ongoing
AVAILABILITY : Product is not yet available

PUBLIC HOUSING TENANT SELF-MANAGEMENT: AN EVALUATION OF THE ALEXANDRA PARK CO-OP CONVERSION PROCESS IN TORONTO

The purpose of this project is to produce an independent review and analysis of the conversion process that has taken place at Alexandra Park/Atkinson Co-op.

CMHC Project Officer : *Vernon Barkwell*
CIDN : 2305 0200020
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available

RISKING MODEL FOR COOPERATIVE HOUSING PORTFOLIO

This project's purpose is to identify the risks associated with the co-operative housing portfolio and the relative importance of these risks, etc. This project is in the final stages of review and should be completed by year-end.

CMHC Project Officer : *Brian Davidson*
CIDN : 2794 0200001
Division : Policy and Research Division
STATUS : Ongoing
AVAILABILITY : Product is not yet available
NEW

SITUATIONS DE CRISE DANS LES COOPÉRATIVES : MIEUX COMPRENDRE POUR MIEUX INTERVENIR

Housing cooperatives are home to 90,000 households in Canada. These units are owned by 2,100 cooperatives. In Quebec, there are approximately 1100 cooperatives which account for 23,000 members. Housing cooperatives in Quebec are smaller than those elsewhere in Canada, except in the Atlantic Provinces. They include a lot of "purchase-renovation projects" and rely on management consisting totally of volunteers in the vast majority of cases.

COOPERATIVE AND NON-PROFIT HOUSING

Though housing cooperatives have been successful for the most part, some housing cooperatives have to cope with crisis situations. Although the vast majority of these cooperatives manage to emerge from their predicaments and restore financial and associative balance, others are confronted by enduring crises which compromise their existence. These crises are usually attributable to several factors, including problems relating to project involvement, finances, buildings and the associative and community living. The aim of this research is to understand the origin of these crises, the conditions that give rise to their emergence and solutions which can be put forward to resolve and, if possible, prevent them.

Prepared by the Confédération québécoise des coopératives d'habitation. CMHC Project Officer: Marie Murphy. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report)

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

DISCRIMINATION IN HOUSING

HOUSING DISCRIMINATION IN CANADA: THE STATE OF KNOWLEDGE

This report is based on a review of research findings on housing discrimination in Canada, an assessment of the strengths and weaknesses of the research methods used, and a field consultation on current issues with informants from various stakeholder groups, e.g., landlord representatives, tenant advocates, real estate and financial representatives.

Much of the research has focused on perceptions of discrimination among ethno-racial minority groups. Generally, the studies are small-scale, use survey methods, use measures of perceived discrimination, and are limited to a few cities and to the rental sector. Findings from quantitative studies conducted from 1957 to 1996 show that racial discrimination is a continuing problem. More recent studies have documented discrimination against women. Other legally prohibited grounds for discrimination, e.g., family status, receipt of social assistance, age, disabilities, and sexual orientation, have not been part of any systematic research. Virtually nothing is known about discrimination in the housing sales market, mortgage lending, or home insurance.

There is widespread agreement that the existing data on housing discrimination are inadequate for directing policy decisions. This report concludes with a research agenda that would address current knowledge gaps.

Prepared by Sylvia Novac, Joe Darden, David Hulchanski, and Anne-Marie Seguin with the assistance of Francine Bernèche. CMHC Project Officer: Phil Deacon. Ottawa: Canada Mortgage and Housing Corporation, 2002. 96 pages

NOTE: No. 104 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

HOME OWNERSHIP

ENHANCING THE APPLICABILITY AND USEFULNESS OF CMHC'S HOMEOWNER'S MANUAL FOR NEW HOMES

This project's objective is to expand the content of the existing Homeowner's Manual to reflect a wider range of current house construction systems and components and to enhance the Manual with additional features in order to increase the usefulness of the manual for the home purchaser and its appeal to builders, realtors and home inspectors.

CMHC Project Officer : *Fanis Grammenos* — ***CIDN*** : 2493 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

IMPACT OF THE HOME BUYERS' PLAN ON THE DECISION TO BUY A HOME

This study is aimed at gaining an understanding of the impacts of the Home Buyers' Plan (HBP) on housing demand. It will clarify the following: Is the HBP a valid tool to facilitate access to homeownership? For which households is the HBP particularly worthwhile? What is the financial impact of RRSPs, especially on the issue of the best strategy between reducing mortgage debt or making RRSP contributions? If households use the HBP but do not repay their RRSP, could this jeopardize their long-term financial security?

CMHC Project Officer : *Ian Melzer* — ***CIDN*** : 2437 0200006
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

HOMELESSNESS

APPLICABILITY OF A CONTINUUM OF CARE MODEL TO ADDRESS HOMELESSNESS

This project will examine the applicability to Canada of a continuum of care (CoC) model by conducting in-depth case studies of the CoC model in four American communities. The project will analyze the benefits and limitations of each CoC program and review its applicability in addressing homelessness in Canadian urban centres.

CMHC Project Officer : *Anna Lenk* — ***CIDN*** : 2353 0200001
Division : Policy and Research Division — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

AT HOME IN A COMMUNITY

The purpose of this project is to identify, based on a case study, the conditions, practices and characteristics of the Projet Aide au Logement (PAL), a supportive housing project, and undertake a more in-depth analysis of the cross-sectoral practices of the PAL.

CMHC Project Officer : *Anna Lenk* — ***CIDN*** : 2525 0201003
Division : External Research Program — ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available — ***NEW***

CAUSES AND CONDITIONS CONTRIBUTING TO FAMILY HOMELESSNESS AND APPROACHES TO ADDRESSING FAMILY HOMELESSNESS

This research project will provide an overview of the observable trends in the causes and conditions of family homelessness in Canada. Both the systemic/structural factors and the individual family circumstances that come to play in making families vulnerable to becoming homeless will be examined. As well, the project will investigate ways and means of addressing family homelessness through prevention, crisis intervention and re-integration strategies. Existing, emerging and innovative strategies which have proven effective or are in the vanguard of new initiatives will be reviewed. Those who provide assistance to and advocate for homeless or vulnerable families and families who are, or recently were homeless, will be consulted.

CMHC Project Officer : *Jim Zamprelli*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : N/A
STATUS : Ongoing

EVALUATING HOUSING STABILITY FOR PEOPLE WITH SERIOUS MENTAL ILLNESS AT RISK FOR HOMELESSNESS: FINAL REPORT

This report describes the development of a Housing Stability Benchmark Evaluation Procedure by the Community Support and Research Unit (CSRU) at the Centre for Addiction and Mental Health. Housing stability for people with serious mental illness (SMI) at risk of homelessness is a concept that has remained under-developed in the research literature. This project began by convening a Housing Stability Steering Committee. A primary task of the steering committee was to work with the CSRU study team to develop a model of housing stability. In addition, a scan of the published and non-published research and program evaluation literature was conducted to identify the factors at various levels that are associated with better housing outcomes for people with SMI.

Based on the model and findings from the scan of the literature, and working with the steering committee, a table of housing stability objectives, benchmark practices and monitoring strategies was developed. In addition, a series of data collection tools were created to complete a housing stability master data sheet. The tools are used to collect information about a housing program's practices. Once entered into a master data sheet, the program's practices are compared to housing stability benchmark practices. This comparison leads to the development of action plans to improve current program practices. The tools developed for this project were pilot-tested with three housing programs in Toronto representing custodial, supportive and supported housing models.

Prepared by Community Support and Research Unit, Centre for Addiction and Mental Health. Prepared for Research Division, Canada Mortgage and Housing Corporation. CMHC Project Officer: Anna Lenk. Ottawa: CMHC, 2001. 206 pages

NOTE: No. 100 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

GOVERNANCE IN LOCAL PARTNERSHIPS TO ADDRESS HOMELESSNESS

This research will identify tools and strategies for problem-solving and decision-making within complex partnerships. This will be done by examining case studies of methods and structures of collaboration among community-based agencies and municipal governments, working on homelessness issues.

CMHC Project Officer : *Anna Lenk* **CIDN** : 2426 0200
Divisipn : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

INVOLVING HOMELESS AND FORMERLY HOMELESS CLIENTS IN PROJECTS AND PROGRAMS TO ADDRESS HOMELESSNESS: FINAL REPORT

This report is based on a study of the ways in which agencies that address homelessness involve their homeless clients in the work of the agency itself, through participation in governance structures, development of policies, work (both volunteer and paid), research and evaluation, building design and development, creative activities, community projects and training/mentorship activities.

The study examined the involvement approaches of twelve agencies in different locations across Canada. The agencies were selected to achieve good regional representation, as well as in terms of the services and programs provided and the characteristics of the homeless population served. Agencies providing services to adult women and men, youth, families and First Nations people were studied in Halifax, Fredericton, Trois-Rivières, Montréal, Toronto, Hamilton, Winnipeg, Regina, Calgary, Edmonton, Vancouver, and Victoria. The types of services provided include emergency shelter, drop-ins, supported housing, newsletter production, education/training, and counselling.

At each of the twelve sites, interviews and group discussions were conducted with management and front line staff and homeless clients of the particular agency. The final report examines the successes, pitfalls and future challenges of involving clients.

Prepared by Jim Ward Associates. Funded jointly by Canada Mortgage and Housing Corporation and the National Secretariat on Homelessness. CMHC Project Officer: Jim Zamprelli. Ottawa: CMHC, October 2001. 63 pages

NOTE: No. 98 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

STUDY OF TENANT EXITS FROM HOUSING FOR CHRONICALLY HOMELESS PEOPLE

This project's objective is to study the current residents and the recent evictees from a Toronto agency that has a long history of providing innovative housing and related services for the chronically homeless and 'hard to house'. It is a study of the users of the services provided by the agency, not the agency itself.

CMHC Project Officer : *Anna Lenk* **CIDN** : 2305 0200013
Division : External Research Program **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

INDUSTRY PROFILE OF CANADIAN LIGHT STEEL BUILDING

This research will provide an overview of the current Canadian lightweight steel framing industry.

CMHC Project Officer : *Jessica Li*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 2431 0900002
STATUS : Ongoing

POTENTIAL ELEMENTS OF A HUMAN RESOURCES DEVELOPMENT STRATEGY FOR THE RESIDENTIAL CONSTRUCTION INDUSTRY

This project's objective is to briefly discuss the unique challenges confronting the housing sector in terms of labour supply and to outline the main components of a human resources development strategy for the residential construction industry. The paper is intended to form the basis of discussion at an upcoming facilitated workshop wherein the potential elements of a human resources development strategy for residential construction will be further refined and developed.

CMHC Project Officer : *David D'Amour*
Division : Strategic Policy & Planning
AVAILABILITY : Product is not yet available
CIDN : 2500 0100001
STATUS : Ongoing

PRODUCTIVITY TRENDS IN THE CONSTRUCTION SECTOR IN CANADA: A CASE OF LAGGING TECHNICAL PROGRESS

The objective of this report is to provide a detailed examination of productivity trends in the construction industry in Canada, with particular reference to residential construction, in order to shed light on the lagging productivity in the sector.

Both labour and total factor productivity growth in the total and residential construction sectors in Canada have been negative over the past two decades. This report provides a detailed examination of output, employment, and productivity trends in the construction sector in Canada and by province, with particular attention to the residential construction sector. It puts forth a number of variables to explain these trends and tests these explanations in a regression model. In addition, the report looks at other potential explanatory factors for which time series are not available, with particular reference to measurement issues and technical change; discusses the micro- and macro-economic environment affecting productivity performance in the construction sector; examines the prospects for productivity growth in the construction sector; and makes a number of recommendations for future work. The major conclusion is that lagging technical progress appears to lie at the root of the construction sector's poor productivity performance. In addition, measurement problems have also likely contributed to the poor measured productivity performance in the sector.

Final Report prepared by the Centre for the Study of Living Standards. CMHC Project Officer: Eric Tsang. Ottawa: Canada Mortgage and Housing Corporation, 2001. ca 350 pages

STATUS : Completed Report
AVAILABILITY : On a loan basis only from: Canadian Housing Information Centre

ROLE OF INDUSTRY STRUCTURE IN INDUSTRY PRODUCTIVITY

This project's objective is to complete a literature survey to analyse the extent to which industry structure is a driver in productivity growth.

HOUSE CONSTRUCTION INDUSTRY

CMHC Project Officer : *Tan M Crombie*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2553 0100001
STATUS : Ongoing
NEW

SUPPLY OF LABOUR IN THE RESIDENTIAL CONSTRUCTION INDUSTRY

The purpose of this project is to increase awareness and understanding of the impacts of labour shortages on housing markets, and to explore the information, tools and techniques required to better manage residential construction labour supply.

CMHC Project Officer : *David D'Amour*
Division : Strategic Policy & Planning
AVAILABILITY : Product is not yet available

CIDN : 2357 0100001
STATUS : Ongoing

HOUSING

DISINVESTMENT AND THE DECLINE OF URBAN NEIGHBORHOODS

Disinvestment and decline occur in inner city neighbourhoods throughout North America. The process is often associated with poverty, high levels of crime, conversion of single family to multi-family housing units, abandonment of the housing stock, and out-migration (movement of the middle class from inner city neighbourhoods to the suburbs). Other features of neighbourhood disinvestment and decline are mortgage redlining, exit of retail business, conversion to lower forms of non-residential land uses such as marginal business operations and specialized services for the poor, decline in relative or absolute land values, and in migration by economically marginalized populations.

This research examined the processes of urban disinvestment and decline with four objectives:
-- to develop an understanding of forces and factors that trigger and accelerate decline;
-- to create a framework for action that can stem and reverse decline;
-- to examine the role of investment in housing as a primer of regeneration; and
-- to identify opportunities for concrete action involving partnerships.

The research aims to inform the development of public policy, primarily at the local and municipal levels, by articulating a range of policies that can work to prevent or reverse inner city decline.

The research comprises four main sources of information: a literature review, key informant interviews in six cities, group interviews in two cities, and analysis of Statistics Canada data. Together, the case studies: examine the extent to which the experience of the six selected cities conforms to the literature; identify the range of responses to urban decline being implemented in the Canadian context and evaluate them; and identify best practices in urban revitalization and renewal.

Ottawa: Canada Mortgage and Housing Corporation, 2001. (Research Highlight: Socio-Economic Series; 90). 6 pages

NOTE : Aussi disponible en français sous le titre : Le désinvestissement et le déclin des quartiers en milieu urbain

STATUS : Completed Research Highlight Order number: 62512
AVAILABILITY : CMHC Information Products and on CMHC's web site

ENVIRONMENTAL SCAN OF HOUSING SECTOR GIS PRACTICES

This project's objective is to perform an environmental scan of housing sector GIS practices.

***CMHC Project Officer :** Roger Mareschal*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available
CIDN : 2392 1000001
STATUS : Ongoing

HOUSING NEEDS OF LOW-INCOME PEOPLE LIVING IN RURAL AREAS

This project is intended to be a preliminary investigation of the housing needs of low-income people living in rural areas, including the existence of homelessness. The methodology includes a statistical profile, mainly from the Census, but supplemented by any surveys which have been done by the provinces/territories and by qualitative research to more finely identify issues affecting very low income or otherwise vulnerable households.

***CMHC Project Officer :** Anna Lenk*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2367 0200
STATUS : Ongoing

IDENTIFICATION OF KNOWLEDGE GAPS IN DISASTER INFORMATION FOR HOUSEHOLDERS IN CANADA: FINAL REPORT

This short survey project assembled and reviewed existing housing information related to 'disasters' to assess if and where additional research may be required. The review concentrated on housing and housing issues. This research investigates information prepared for householders by organizations in Canada, the United States, Britain, Australia and France. Material was collected and analyzed for the following fifteen threats: avalanches; cold waves; drought; earthquakes; forest fires; house fires; flooding; hail; heat waves; landslides/mudslides; multiple coverage; power outages; tornadoes, torrential rain; and winter storms. The report assesses the suitability of the information for the intended audience and identifies gaps in the current consumer information.

Prepared by John Newton. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Don Fugler. Toronto: John Newton Associates, 2001. 82 pages

STATUS : Completed Report
AVAILABILITY : On a loan basis from: Canadian Housing Information Centre

INTERGENERATIONAL HOUSING TRENDS AND CHALLENGES

This project's objective is to complete an issue paper on intergenerational housing trends and challenges.

***CMHC Project Officer :** Leanne Elliott*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2409 0100001
STATUS : Planned

NATIONAL CONSULTATION TO EVALUATE "HOME$AVE" AN ASSET-BASED APPROACH TO ANTIPOVERTY USING HOUSING AS A CATALYST

The objective of this project is to undertake a consultation to evaluate an asset-based antipoverty strategy using housing as a catalyst. The Home$ave consultation will validate the assumption that low-income individuals will respond to financial incentives to engage in a range of activities related to housing.

CMHC Project Officer : *Eric Tsang*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2498 0100001
STATUS : Ongoing

SPECIAL STUDIES ON 1996 CENSUS DATA

This project is composed of developing a series of concise studies that explore the housing conditions reported in the 1996 Census of Canada. Nine studies are currently completed and available on the CMHC web site:

- Research Highlights Issue 55-1 Canadian Housing Conditions uses data primarily at the national level, explains commonly used terminology, and examines the largest groupings of households.
- Research Highlights Issue 55-2 Housing Conditions in Metropolitan Areas examines Canada's 25 Census Metropolitan Areas.
- Research Highlights Issue 55-3 Housing Conditions of Immigrants discusses the housing conditions of households whose primary maintainer is an immigrant to Canada.
- Research Highlights Issue 55-4 Housing Canada's Children examines the housing environment of Canada's children.
- Research Highlights Issue 55-5 Changes in Canadian Housing Conditions, 1991-96 examines changes in the housing conditions of non-farm, non-Native households between the 1991 and 1996 Censuses.
- Research Highlights Issue 55-6 Housing Conditions of Native Households examines the housing conditions of households defined as Native using the self-identification definition available in the Census for the first time in 1996.
- Research Highlights Issue 55-7 Canadian Households in core housing need and spending at least half their income on shelter, profiles the characteristics of these Canadian households which in 1996 constituted under 7% of the 9.8 million households studied, or about 38% of the 1.7 million households in core housing need.
- Research Highlights Issue 55-8 Seniors' Housing Conditions examines the housing conditions of households led by persons 65 years of age or older. Most senior-led households are well-housed: about 79% (1.6 million households) occupy or could afford to occupy, housing which meets or exceeds all housing standards. However, 442,000, or 21% of senior-led households were in core housing need, with 64% of these being tenants.
- Research Highlights Issue 55-9 examines the housing conditions of women and girls, and of households with a female primary maintainer. About 84% of women and girls in Canada lived in households that were, or could have afforded to be, well-housed. However, 16%, or 2.1 million females, lived in households in core housing need, a higher proportion than for males (13%). Two key groups of female-led households have high rates of core housing need: women living alone and female single parent households.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Research highlights are available

CIDN : 1988 0200003
STATUS : Ongoing

ACT REGIONAL STAKEHOLDER INFORMATION SESSIONS

Ten information sessions were held across Canada to inform housing stakeholders of regulatory reform solutions that have been generated under the Affordability and Choice Today program. The intent was to encourage replication of these solutions. Stakeholders included municipalities, home builders, non-profit housing groups and other housing specialists. Forums were held in Saint John, Halifax, Quebec, Montreal, Toronto, Sudbury, Winnipeg, Saskatoon, Vancouver and Victoria.

STATUS : Completed

AVAILABILITY : There will be no product for this project

AFFORDABLE HOUSING ADVISOR

This project will assemble an electronic database of strategies and ideas that have been successfully used to improve housing affordability for inclusion on CMHC's web site. These strategies will appear under categories of activity such as: Policy and Regulation; Housing and Community Design; Construction and Technology; Operations and Management; and Redevelopment. Each strategy will be explained and illustrated with example projects. When completed, it is intended that the database will be accessible through the CMHC web site and will be fully searchable and linked to relevant sources of information of the strategies and examples. The sources will include CMHC reports, publications by other organizations and individuals and web sites of public, non-profit and non-government organizations.

STATUS : Completed

AVAILABILITY : Product is available on the web

AFFORDABLE HOUSING COMPONENT OF CMHC'S WEB SITE

The objective of this research project is to enhance the affordable housing component on CMHC's web site in order to provide practical information, guidance and access to ancillary related information/reference materials to affordable housing sponsors, builders, architects, local governments, and to others interested in the provision of affordable housing. The scope of the project includes:

1. researching and writing descriptions of affordable housing projects highlighting the innovative measures and approaches used by project sponsors in undertaking such projects ; and
2. identifying additional Canadian web sites which contain useful information and resource material for those interested in creating affordable housing, and then preparing brief summary descriptions of the content of both these new as well as existing web sites already included within the affordable housing component of CMHC's web site.

CMHC Project Officer : *Fanis Grammenos*

CIDN : 2430 0200002

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is not yet available

NEW

AFFORDABLE HOUSING IN VANCOUVER FOR PEOPLE LIVING WITH HIV/AIDS = DES LOGEMENTS ABORDABLES À VANCOUVER POUR LES PERSONNES VIVANT AVEC LE VIH/SIDA

Wings Housing Society opened the Bonaventure, an affordable housing project for persons living with HIV and AIDS, on January 21, 1999. This project took less than one year from conception to ribbon snipping. The speed at which this project was brought on stream reflects the housing crisis being faced by hundreds of Vancouver residents living with HIV disease. The Bonaventure provides housing for 57 people in roomy, affordable apartments located adjacent to some of the country's best clinical and social support services. This report chronicles the conception and implementation of the Bonaventure project and highlights the use of innovative renovation of existing historic buildings with unusually high density allowances as a way to provide affordability, choice and quality housing to some of Canada's most marginalized individuals.

Case study written by Katherine Taylor, Options Consulting, Wings Housing Society. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today (ACT) Demonstration Project. ACT Case Study) 35 pages

STATUS : Completed Report; Order number: 62340

AVAILABILITY : CMHC Information Products

REFINING OF CMHC HOUSING AFFORDABILITY INDICATORS

The purpose of this project is to undertake a study to refine CMHC housing affordability indicators.

CMHC Project Officer : *Louis Trottier*

CIDN : 2320 1000001

Division : Market Analysis Centre

STATUS : Ongoing

AVAILABILITY : Product is not yet available

HOUSING AND IMMIGRATION

METROPOLIS CENTRES OF EXCELLENCE FOR RESEARCH ON IMMIGRATION ISSUES

CMHC and other federal departments provide ongoing financial support to stimulate and support policy-relevant research on immigration issues, through a network of research centres in Canadian universities, (Centres of Excellence). The research produced will be used for the assessment of and development of policies and programs affecting immigrants and new Canadians. As an example, CMHC should benefit from planned projected research to be undertaken by the Centres in such areas as:

1. the effect of immigration on housing markets, demand and supply;
2. the effect of immigration on urban development, including issues of renewal of the urban core;
3. the impact of immigration on housing need, affordability, homelessness and the demand for social housing;
4. the social and spatial mobility of immigrants as compared with the profiles of the Canadian-born;
5. the relationship between immigration and the formation of ethnic, cultural or religious enclaves; the dynamics of enclaves - their role in integration (bridging or isolating), their economic role, their effect on city life, on urban renewal, on public safety, and so forth;
6. the relationship between metropolitan infrastructure (the quantity, quality and distribution of housing and public space) and immigrant integration.

Information on Metropolis and on the almost 200 funded research projects can be found at <canada.metropolis.net>.

CMHC Project Officer : *Jim Zamprelli*

CIDN : 2564 0200001

Division : Policy and Research Division

STATUS : Ongoing

AVAILABILITY : Product is available on the web

HOUSING AND IMMIGRATION

STUDY ON THE RESIDENTIAL INTEGRATION OF IMMIGRANT YOUTH IN MONTRÉAL

The purpose of this project is to study and propose solutions to the problem of integrating immigrant youth in Montréal.

CMHC Project Officer : *Kim-Anh Lam*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2316 0200001
STATUS : Ongoing

HOUSING AND TAXATION

EVALUATION OF HOUSING TAXATION MEASURES

This report evaluates income tax and GST measures affecting the housing industry based on the principles of taxation: effectiveness, efficiency, equity, affordability and integrity.

In addition to reviewing the principles of taxation, the report discusses recent trends in tax policy, the rationale for the current treatment of income from property (which includes rental income) vis-à-vis income from a business, the conceptual basis for providing tax preferences, and real estate as a tax shelter, and presents a profile of the participants in the housing sector.

The discussion of the housing measures outlines the implications, rationale and history of each measure. The Department of Finance distinguishes between activities which are "active" and those which are "passive" in nature. The fundamental conceptual issue throughout the report is the different treatment of rental property income (passive income) and income from a business (active income). Ceteris paribus, passive income bears a higher tax burden than active income, which benefits from tax preferences not available to passive income. The housing industry has argued for tax preferences for rental income and rental properties similar to those available to business income and business properties.

Based on the evaluation of principles, all existing tax measures are deemed to have largely attained the effectiveness and equity principles. Certain deficiencies are noted with respect to the efficiency principle. Several measures are considered to have partially attained the affordability principle, primarily because they reduce the quantum of re-investment funds available to the rental property owner.

Prepared by F.B. Gorman & Associates Limited. CMHC Project Officer: Eric Tsang. Ottawa: Canada Mortgage and Housing Corporation, 2002. 143 pages

NOTE: No. 106 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : New Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

HOUSING AND TAXATION

TAXATION OF RESIDENTIAL PROPERTY IN CANADA

The system of taxation in Canada has become increasingly complex over the past several decades. Taxes include federal, provincial and municipal, or local, taxes. The federal government levies personal and corporate income taxes, other corporate taxes like payroll and capital taxes, a value-added tax (the Goods and Services Tax), and excise taxes. The provincial governments also collect personal and corporate income taxes, but generally follow the rules set out by the federal government. Provincial governments also levy sales taxes or participate in the federal value-added tax and collect taxes such as land transfer taxes. Local governments generally only collect property taxes and certain fees.

Many of these taxes affect the production, ownership and use of housing, and decisions surrounding these functions. This report sets out and explains tax provisions relating to housing providers, owners and renters. Section 2 presents the taxation of producers (e.g., home builders and multiple-unit residential builders.) Section 3 identifies the taxation of owners of rental housing (e.g., corporations -- both principal business corporations and not, real estate investment trusts, and individuals). Finally, section 4 discusses the taxation of the occupant individuals of owned and rented housing. Section 5 summarizes the criteria, methodology, and possible research questions that could be explored, with particular focus on the taxation of the providers of rental housing. By presenting the tax provisions by economic function, rather than by taxation type, the focus is comparisons across alternative forms that these economic activities take, as well as providing a better framework to analyze the impact of the tax provisions on housing-related economic activities.

Prepared by Kenneth J. Klassen and Stanley N. Laiken. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Eric Tsang. Ottawa: CMHC, 2001. 66 pages

NOTE : Aussi disponible en français sous le titre : Imposition des immeubles résidentiels au Canada

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

HOUSING EXPORT OPPORTUNITIES

CANADIAN BUILDING PRODUCT DISTRIBUTION CENTRE IN SOUTHERN CHINA

This project's purpose is to conduct a detailed feasibility plan to establish a Canadian building product distribution centre in southern China.

CMHC Project Officer : *Marion A Rasmussen*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 2174 0900001
STATUS : Ongoing

CANADIAN HOUSING EXPORTERS IN THE KOREAN HOUSING MARKET

The objective of this project is to analyze the Korean housing market and to identify market potentials and opportunities for Canadian housing exporters in the Korean housing market.

CMHC Project Officer : *Jay Thakar*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 2332 0900001
STATUS : Planned

CONTRIBUTION TO A STUDY ON PACIFIC RIM MARKETS FOR TERMITE-RESISTANT WOOD PRODUCTS

The objective of this project is to study the Pacific Rim markets for termite-resistant wood products.

CMHC Project Officer : *Jay Thakar*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 2104 0900001
STATUS : Ongoing

DEVELOPMENT OF A GUIDE TO THE UNITED KINGDOM BUILDING REGULATIONS

The objective of this project is to develop a guide on the building regulations in the United Kingdom.

CMHC Project Officer : *Terry Robinson*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 1953 0900
STATUS : Ongoing

DEVELOPMENT OF AN EXPORT TOOL-KIT FOR CHINA

This project's objective is to prepare a comprehensive assessment and collection of information pertaining to the export of Canadian housing product to China.

CMHC Project Officer : *Murray Rasmussen*
Division : CMHC International
AVAILABILITY : Product is not yet available
CIDN : 2347 0900001
STATUS : Ongoing

GUIDE TO THE RULES UNDER THE NORTH AMERICAN FREE TRADE AGREEMENT AND U.S. IMMIGRATION LAW FOR CANADIAN COMPANIES IN THE HOUSING, RENOVATION AND RESIDENTIAL CONSTRUCTION SECTOR

This guide outlines the procedures as well as the criteria for those currently engaged in residential renovation, manufactured housing production, and the construction of on-site residential homes that must be met for those seeking temporary entry to the United States under the North American Free Trade Agreement (NAFTA) and U.S. immigration law. This guide is intended to provide general information about the NAFTA and U.S. immigration rules and regulations. Questions most asked by Canadian new home builders, manufacturers and renovators are included as a preamble to the guide.

Ottawa: Canadian Home Builders' Association, Canadian Manufactured Housing Institute with the assistance of Canada Mortgage and Housing Corporation, 2000. vi, 28 pages

STATUS : Completed Report
AVAILABILITY : Canadian Home Builders' Association

HOUSING MARKET GUIDES ON FOUR CITIES IN THE UNITED STATES

This project's objective is to prepare individual Market Guides for four cities in the United States: Boston, Chicago, Dallas, and Seattle.

CMHC Project Officer : *Sanjar Farzaneh* **CIDN** : 2466 0900001
Division : CMHC International **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING MARKET RESEARCH: OPPORTUNITIES FOR CANADIAN TRAINING PROGRAMS IN CHINA

The objective of this project is to research the needs and market potential of training programs in the housing sector in China, in order to respond to an emerging demand by Canadian exporters and Chinese clients.

CMHC Project Officer : *Marion A Rasmussen* **CIDN** : 2455 0900001
Division : CMHC International **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

JAPANESE CONSUMERS BASED ON NINE PERFORMANCE INDICATORS

The purpose of this project is to carry out a study segmenting Japanese consumers based on nine performance indicators.

CMHC Project Officer : *Laura Diakiw* **CIDN** : 2494 0900001
Division : CMHC International **STATUS** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

PREFABRICATED HOUSING IN SWEDEN AND FINLAND

This trip was organized as part of the Forintek/Concordia collaborative project aimed at identifying issues and trends affecting the prefabricated industry sector. The Scandinavian countries and Finland are recognized for their expertise with the prefabrication of building products. Similarly to Canada, Sweden and Finland rely on abundant forest resources, have small internal markets and are net exporters of prefabricated homes to other countries.

During this trip the authors visited five prefab manufacturing plants, one equipment manufacturer, a construction exhibition, a home construction site, one university, and two research institutes involved with the industry of prefabricated systems in Sweden and Finland. The objective of this trip was to study practices followed by the industry of prefabricated building systems in the two countries and investigate the type of research activities undertaken by the research institutions to support this industry sector. This report summarizes the key findings of the plant visits and interviews with researchers.

Prepared by Paul Fazio and Louis Poliquin. Ottawa: Canada Mortgage and Housing Corporation, 2002, c2000. 56 pages

Note : Aussi disponible en français sous le titre : Habitations préfabriquées en Suède et en Finlande

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

STUDY OF THE MIDWEST BUILDING PRODUCTS MARKET IN THE REGIONS OF ILLINOIS, WISCONSIN AND MISSOURI

The purpose of this project is to undertake a study to provide Canadian companies with a general overview of the market forces within the building products sector in the three state regions of Illinois, Wisconsin, and Missouri.

CMHC Project Officer : *Carol M Kerley* ***CIDN*** : 2172 0900001
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

TIPS ON SELLING IN THE U.S. GREEN HOUSING MARKET

Do you have a housing system or building product that reduces environmental impacts or contributes to occupant health and safety? There may be a market for you in the United States.

Housing markets in the United States are increasingly adopting a build green strategy to give consumers what they want. Canada Mortgage and Housing Corporation (CMHC) prepared this booklet to help you tap into those markets. The booklet provides a definition of green building, outlines basic steps to take to learn about the U.S. green housing market, and includes a listing of green building programs. It covers distributors and retailers, directories and product certification, conferences and events, key contacts and other marketing considerations.

Ottawa: Canada Mortgage and Housing Corporation, 2002. 36 pages

NOTE : Publié aussi en français sous le titre : Conseils pour vendre dans le marché de la construction écologique aux États-Unis

STATUS : Completed Report Order number: 62870
AVAILABILITY : CMHC Information Products and on CMHC's web site

UPDATE OF THE STUDY ON MID-ATLANTIC BUILDING MATERIALS MARKET

To support an update of the study entitled "Business Opportunities for Canadian Building Materials Manufacturers in the Mid-Atlantic Region of the U.S. of America" with new actual and forecast data.

CMHC Project Officer : *Carol M Kerley* ***CIDN*** : 2228 0900001
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

USER INTERFACE FOR CD-ROM ON MARKET GUIDES TO THE U.S.

This project's objective is to design the interface for users of a CD-ROM containing market guides to the Unites States and to convert the files for transfer on the CD-ROM.

CMHC Project Officer : *Louis Musto* ***CIDN*** : 1953 0900012
Division : CMHC International ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

HOUSING FORECASTING AND DEMAND

ESTIMATION OF CORE HOUSING NEED USING THE SURVEY OF HOUSEHOLD SPENDING MICROFILE

This External Research Program project is aimed at developing a methodology for tracking housing conditions and need between censuses using the latest (1999) Survey of Household Spending (SHS) file. The contractor will carry out research at Statistics Canada with the internal SHS working file to examine how to apply CMHC's indicators for housing affordability, adequacy, and suitability and the integrated indicator of core housing need to the SHS. The contractor will, in the process, identify and examine the nature of any problems associated with small SHS sample size, suggesting workarounds where possible, at the same time as evaluating the longer term potential to expand the survey sample.

CMHC Project Officer : *John E Engeland*	***CIDN*** : 2437 0200016
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

HOUSING MARKET

ETHNIC CHANGES AND THE HOUSING MARKET IN RIVIÈRE-DES-PRAIRIES, MONTRÉAL

This project's objective is to provide an understanding of the residential building depreciation mechanism in order to find out the share of the effects of ethnicity in relation to the general economic conditions prevailing on the market in Rivière-des-Prairies, Montreal.

CMHC Project Officer : *Philippe LeGoff*	***CIDN*** : 2437 0200007
Division : External Research Program	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

IMPACT OF CONVERSIONS OF RENTAL TO OWNERSHIP UNITS ON HOUSING MARKETS IN ONTARIO

This study seeks to generate a framework for addressing the changes in the availability of affordable housing stock in large Ontario cities through conversions of rental units and, by extension to understand the impact of these conversions on other components of the housing market, in particular the new homes market.

CMHC Project Officer : *Alain Miguelez*	***CIDN*** : 2226 1000001
Division : Market Analysis Centre	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

INVESTOR CONDOMINIUM MARKET IN VANCOUVER, BURNABY, AND RICHMOND

The objective of this project is to undertake a detailed study of the investor condominium market in Vancouver, Burnaby, and Richmond. The study will identify the number of investor condominiums in these areas, as well as the rental rates and vacancy rates.

CMHC Project Officer : *Cameron Muir*	***CIDN*** : 2283 1000001
Division : Market Analysis Centre	***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available	

HOUSING MARKET

STUDY ON THE RESIDENTIAL PATH OF PEOPLE AGED 45 TO 64 YEARS IN THE MONTRÉAL AND QUÉBEC CENSUS METROPOLITAN AREAS (CMAS)

This project's objective is to provide a study on the residential path of people aged 45 to 64 years in the Montréal and Québec census metropolitan areas (CMAs).

CMHC Project Officer : *Sandra S Girard*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available

CIDN : 2293 1000001
STATUS : Ongoing

SURVEY AND LITERATURE REVIEW OF SOCIOECONOMIC TRENDS AFFECTING CONSUMERS AND HOUSING MARKETS

This research project will review what is known and what has been analyzed in regard to important existing and emerging socioeconomic trends and how they might affect consumers and housing markets over the next 5 years. The contractor will provide views regarding what additional research could be undertaken which would address identified information research gaps in this area.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : N/A
STATUS : Ongoing

HOUSING RESEARCH

DIRECTED RESEARCH EVALUATION REPORT

This study investigated the economic benefits of the Directed Research (DR) and related information transfer of the Canada Mortgage and Housing Corporation (CMHC). The intent was to determine whether there is a positive economic return to Canadian society from CMHC's investment in the DR. This study was commissioned in response to a Treasury Board request for a further evaluation of CMHC's research, information and communications function following a 1994 evaluation study. The 1994 evaluation concluded that DR was relevant and produced high quality and useful research. The current study builds on that earlier evaluation by seeking to quantify the benefits of CMHC's DR. It does not include analysis of other CMHC research: e.g., for market analysis and export development, or CMHC's Responsive Research Programs (the External Research Program and the Housing Awards Program).

This study used a partial benefit/cost (B/C) methodology that compared the benefits of a small number of research areas expected to have large net benefits to the total costs of CMHC DR. An iterative process was used to identify cases in which the benefits were likely to be large, the benefits could be quantified in dollar terms, there was a discrete set of uses and users for the research results, the impacts could be clearly attributed to use of the research results or participation in the research, and CMHC's DR had a significant role in creating the impacts. Four cases of research impacts were investigated in detail, and five other cases were also examined at the study design stage. The four cases for which net benefits were estimated were British Columbia wood-frame moisture damage, brick veneer steel studs, mandatory fire sprinklers, and northern water microsystems.

The findings indicate that CMHC's DR will likely provide significant benefits to Canada over the next several decades, and represent a positive return from CMHC's housing research.

Prepared by KPMG Consulting LLP for Audit and Evaluation Services. Ottawa: Canada Mortgage and Housing Corporation, November 2001. 36 pages

NOTE : Aussi disponible en français sous le titre : Rapport d'évaluation de l'activité de recherche commandée

STATUS : Completed Report **AVAILABILITY :** Product is available on the web

MORTGAGES AND HOUSING FINANCE

DISCLOSURE REQUIREMENTS IN MORTGAGE LENDING AND SUPPORT TO BORROWERS IN OBTAINING THE BEST MORTGAGE TERMS

The purpose of this project is to assess the extent to which Canada's mortgage lending and consumer protection legislative and regulatory framework, and industry practice in terms of disclosure and borrower support, enhances the chances of obtaining mortgage funding on terms consistent with the risk presented by the borrower's circumstances. The study will compare the lending framework and practices in the US and Canada, etc.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 2525 0201005
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

EVOLVING IMPACT OF E-COMMERCE ON HOUSING FINANCE ACCESS AND AFFORDABILITY: US EXPERIENCE AND LESSONS FOR CANADA

The objective of this research is to examine the significant changes arising in the housing finance market place resulting from e-commerce and their impact on housing finance access and housing affordability. An overview of experience to date and international comparisons with the US will be instructive to Canadian stakeholders being impacted by this growing trend.

The research project will entail a literature review, Internet searches, interviews and discussions with knowledgeable US and Canadian industry participants, government regulatory agencies, housing sector stakeholders and other key informants.

CMHC Project Officer : *Ian Melzer* ***CIDN*** : 2389
Division : Policy and Research Division ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PERSONS WITH DISABILITIES

DETERMINING THE EFFORT NEEDED BY ADULTS AND SENIORS TO CLIMB RAMPS USING MANUAL WHEELCHAIRS

The objective of this research is to determine the effort needed by adults and seniors to climb ramps using manual wheelchairs.

CMHC Project Officer : *Luis Rodriguez* ***CIDN*** : 2305 0200019
Division : External Research Program ***STATUS*** : Ongoing
AVAILABILITY : Product is not yet available

PERSONS WITH DISABILITIES

EXAMINING THE HOUSING CHOICES OF INDIVIDUALS WITH DISABILITIES

Many individuals with disabilities are concerned about the limited types of housing options available for persons with disabilities. However, information on the living arrangements and housing preferences of individuals with disabilities is limited. To begin to understand the situation better, this exploratory survey research study examines the housing choices of persons with mobility and/or agility disabilities living in Regina. The study provides information on the current living arrangements of individuals with disabilities; determines if there are individuals who could benefit from more accessible housing; explains what the term "more accessible housing" means in Regina and develops a profile of those people who could benefit from more accessible housing.

Prepared by Janice Solomon. This study was managed by the City of Regina with advice and assistance from the Advisory Committee on Access and the Department of Sociology and Social Studies, University of Regina. CMHC Project Officer: Thomas Parker. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) ca. 38 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

MAJOR MAINTENANCE AND RESIDENTIAL RENOVATION: A SURVEY OF MEANS TO IMPROVE THE ARCHITECTURAL ACCESSIBILITY OF EXISTING BUILDINGS

The objective of this project is to study the extent to which it is possible to integrate architectural accessibility into existing residential buildings during major maintenance or common renovation work planned by an owner.

CMHC Project Officer : *Rachelle Luengas*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2021 0200001
STATUS : Ongoing

SPACE EFFICIENT UNIVERSAL DESIGN INNOVATIONS

The research will evaluate design innovations which have been developed specifically to enhance access for people who use wheelchairs.

CMHC Project Officer : *Thomas Parker*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2009 0200001
STATUS : Ongoing

POPULATION HEALTH

DEVELOPMENT OF A RESEARCH FRAMEWORK FOR POPULATION HEALTH AND HOUSING

The National Housing Research Committee is interested in the possible links between housing and health status at the population level. This project begins to address the lack of comprehensive research in the area. More specifically, it will summarize what is known using existing literature reviews, recent unreviewed literature, current work underway. Based on this, the project will: develop a theoretical framework using accepted concepts and definitions where they exist, assess the difficulties of research in this area and identify areas with most promise, assess institutional research capacity for mounting a program of research in this area, and write a research proposal, for submission to a funding body, whereby NHRC could partner.

CMHC Project Officer : *Phil Deacon*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2489 0600001
STATUS : Ongoing

REGULATORY REFORM

OPPORTUNITIES FOR IMPROVING THE INSPECTIONS PROCESS, CITY OF VANCOUVER, BRITISH COLUMBIA = OCCASIONS D'AMÉLIORER LE PROCESSUS D'INSPECTION, VILLE DE VANCOUVER (COLOMBIE-BRITANNIQUE)

In the mid-1990s, the building regulatory process in Vancouver was identified as very complex and time consuming. Although the major duplication and red tape issues were found in the planning approval process, building inspections could also be a problem. Trade and building inspection functions were separate, data recorded in the field had to be re-recorded later, information needed on site was only available at the municipal office, and interpretation of requirements could vary from one person to another.

In 1994, the City of Vancouver started an ambitious program to fundamentally change and improve its services, an initiative it called the "Better City Government Program." Redesign of the planning and inspections process represented a central element of this program. Within the inspections area, a team was set up to re-think what the goals and functions of construction site inspections really were, and how they could best be accomplished.

The project produced benchmarking information of best practices, based on six other municipalities in Canada, the United States and Australia, plus the Workers' Compensation Board of British Columbia. The team also produced a proposed process for inspections, including flow charts that concentrated on value-added work and expanded the responsibilities of inspectors. Their "Day-in-the-Life" description emphasized site use of cell phones, laptop computers and modems. They also produced a business case, with plans for implementation and cost recovery. Through an assessment of field technologies, field staff isolated pros and cons of different computerized systems and produced practical criteria for judging equipment in the future.

Actual implementation has been delayed by a rethinking of the reorganization of the planning and permitting process. Many elements were also put on hold pending decisions on a major new computerization of Vancouver's overall geographic and permitting functions. However, the project has produced a body of information which leaves the inspections department well positioned to pursue change when those two initiatives are completed. Also, a new "team approach" has been instituted for complex new projects and renovations. So far, the main results have been in speeding up development approvals.

Prepared by Rowena E. Moyes. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today ACT Regulatory Reform Project; ACT Case Study) 31 pages

Order number: 62326

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

HISTORY OF CANADA'S RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP)

The Residential Rehabilitation Assistance Program (RRAP) was announced by the Government of Canada in the spring of 1973 and became operational the following year. It came about because of the dual recognition that the existing housing stock represented an important national asset that needed to be preserved, and that a significant portion of this stock was substandard and occupied by households unable to afford necessary repairs. Over the following 26 years, more than 600 000 dwellings, mostly comprised of self-contained homeowner and rental units, but also a good number of beds in hostels, dormitories, special care facilities and rooming houses, were repaired with RRAP assistance across all regions and areas of the country. During this time, RRAP demonstrated great versatility in adapting to the priorities of the day in achieving a broad range of public objectives from improving the housing conditions of low-income Canadians, neighourhood improvement and employment generation, to meeting the special needs of persons with disabilities and the homeless.

This history is divided into two main parts. The first recounts the evolution of RRAP from its inception to the present day. The second part explores the evolution of critical aspects of RRAP related to need, its design, management and accomplishments, and concludes with an epilogue which reviews reasons for RRAP's durability and explores the need for targeted housing rehabilitation programs in the future.

Prepared by Dale Falkenhagen for Canada Mortgage and Housing Corporation. CMHC Project Officer: Brian Davidson. Ottawa: CMHC, December 2001. xviii, 196 pages

Note : Aussi disponible en français sous le titre : Histoire du Programme d'aide à la remise en état des logements (PAREL) du Canada

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

RENTAL, ROOMING HOUSE AND NON-RESIDENTIAL CONVERSION COMPONENTS OF THE RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP PHASE I)

This project's objective is to evaluate the rental, rooming house and nonresidential conversion components of the Residential Rehabilitation Assistance Program to assess the rationale for and impacts of these program components from 1995 to 2000 inclusive.

CMHC Project Officer : *Connie J Wilson*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available
CIDN : 2785 0500001
STATUS : Ongoing

RESIDENTIAL REHABILITATION ASSISTANCE PROGRAM (RRAP PHASE II)

The purpose of this project is to conduct an evaluation of the Homeowner and Persons with disabilities components of the Residential Rehabilitation Assistance Program (RRAP) Phase II.

CMHC Project Officer : *Eva Berringer*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available
CIDN : 2785 0501001
STATUS : Ongoing
NEW

UNDERSTANDING THE MOTIVATIONS OF HOMEOWNERS TO CONVERT THEIR BUNGALOWS IN QUÉBEC CITY SUBURBS

This research will study the motivations that bring homeowners in Québec City suburbs to convert their bungalows. The objectives of this research are to clarify the decision-making process associated with the home conversion projects so as to subsequently develop a theoretical conceptual model apt to describe household behaviour.

CMHC Project Officer : *Pascal Yvan Pelletier*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2437 0200021
STATUS : Ongoing

RENTAL HOUSING

ASSESSMENT REPORT ON RENTAL HOUSING TAXATION IN CANADA

The objective of this project is to write an assessment report on rental housing taxation in Canada which will identify all rental housing and related tax provisions; explain how each of these rental housing and related tax operates, including the use of illustrative numerical examples in each and every case; and discuss the generally-accepted criteria and a feasible methodology for determining the appropriateness of the current taxation regime applicable to rental housing.

CMHC Project Officer : *Eric Tsang*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2405 0100002
STATUS : Ongoing

ETHICAL AND SOCIAL FUND INVESTMENTS IN LOWER-TO-MODERATE INCOME AFFORDABLE RENTAL HOUSING IN CANADA: AN ASSESSMENT

This study assesses the feasibility of encouraging equity investment in affordable lower-to-moderate income rental housing (ARH) in Canada, within the framework of a public-private partnership (PPP) model, via ethical or socially responsible investment (SRI) funds and pension funds. The study examines the U.S. model for ARH PPP arrangements, with particular emphasis on the features that relate to equity investment. The structure of the ethical investment industries in both the U.S. and Canada are examined in detail. A number of specific reviews of fund investment structures in the U.S. are undertaken, and the results of a survey of funds in Canada are presented. The regulatory/legislative and investment environments in Canada are assessed. The study explores a number of options for structuring equity investments for ethical funds in Canada. The primary conclusion of the study is that such investments are conceptually feasible but that both the U.S. and Canada have a long way to go in developing the investment framework and incentive structure to facilitate such investments.

Prepared by Alex S. MacNevin. Prepared for Canada Mortgage and Housing Corporation. CMHC Project Officer: Lisa Daher. Ottawa: CMHC, 2002. (External Research Program Research Report) 134 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

HOUSING STABILITY INDICATORS AND IMPACTS

This research initiative will survey between 700 and 1,000 renter households in Greater Vancouver to begin to develop a better understanding of the overall level of housing stability/instability that exists among renter households

CMHC Project Officer : *John E Engeland*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201015
STATUS : Ongoing
NEW

INTERVENTIONS FOR ROOMING HOUSES, SROS AND TENANTS: FINAL REPORT

Outside of social housing, rooming houses and single room occupancy (SRO) units are the least expensive form of permanent housing, and essential for very low-income single people. The CMHC study, Regulatory Factors in the Retention and Expansion of Rooming House Stock (2000) provided information on a number of strategies to stabilize the rooming house stock, which is under constant threat from a variety of forces.

This study looked at other approaches to conserving rooming house and SRO stock and stabilizing tenancies. A range of initiatives was addressed in seven case studies involving:
-- conflict reduction;
-- public education;
-- community development;
-- building construction; and
-- supportive housing.

Prepared by The Starr Group Inc. CMHC Project Officer: Anna Lenk. Ottawa: Canada Mortgage and Housing Corporation, December 2001. 93 pages

NOTE: No. 102 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight
AVAILABILITY : Canadian Housing Information Centre

LOGEMENTS PRIVÉS AU QUÉBEC : LA COMPOSITION DU PARC DE LOGEMENTS, LES PROPRIÉTAIRES BAILLEURS ET LES RÉSIDANTS

This study was conducted by the INRS-Urbanisation, Culture et Société for the Société d'habitation du Québec, Canada Mortgage and Housing Corporation, the Régie du logement and the Régie du bâtiment du Québec. The basic information, concerning the characteristics of the Quebec housing stock, its occupants and the ownership of the private rental housing stock, was obtained through a telephone survey conducted by Jolicoeur et associés among renters, homeowners and landlords in the different segments of the Quebec rental housing stock. This survey was conducted from October 5, 2000, to February 12, 2001.

The first stage of the survey was conducted among renters and homeowners, following a stratified sampling plan based on region and tenure. With regard to the regions, the sample was structured so as to obtain significant data for three sets: the Montréal and Québec metropolitan areas and the territory outside the major centres. In this stage of the survey, 10,330 households were polled, including 6,051 homeowner households and 4,279 renter households. The second stage of the survey consisted in reaching a representative sample of landlords. To this end, building owner or manager contact information provided by the renters of private housing was used. In this second stage of the survey, the sample was stratified based on region and building size, and 1,147 interviews were conducted.

The analysis presented examines, in turn, each of the following elements:

- the composition of the housing stock;
- landlords;
- renter households;
- homeowner households; and
- renovations performed by the homeowners.

Prepared by Francine Dansereau and Marc Choko, with the collaboration of Gérard Divay. Québec: Société d'habitation du Québec, 2002.

STATUS : New Completed Report

AVAILABILITY : Centre de documentation de la Société d'habitation du Québec
Succursale de Québec
Société d'habitation du Québec
Tél.: (418) 646-7915
1-800-463-4315

NATURAL VACANCY RATES IN CANADIAN URBAN CENTRES, 1992-2001

This study will estimate the 'natural vacancy rate' for each of the major market areas in Canada (Census Metropolitan Areas, or CMAs), spanning the 1998 to 2001 period, and will investigate the extent to which the natural vacancy rates have changed over the period.

CMHC Project Officer : *Michel Laurence*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201007
STATUS : Ongoing
NEW

NON-PAYMENT OF RENTS AND THE HEALTH OF THE RENTAL SECTOR IN QUEBEC

This research will measure the extent and spatial distribution of the non-payment of rents in Quebec and its economic impact on the rental sector; identify the socio-economic and demographic factors that could explain the growth of this phenomenon as observed in the number of actions brought by landlords; analyze the regulations governing the processing of recovery-termination cases in view of improving the current procedures at the Régie du logement.

CMHC Project Officer : *Charles Fortin*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200018
STATUS : Ongoing

ONLINE RESIDENTIAL RENTAL GUIDE

This project's objective is to undertake research and produce content for an online residential rental guide. This guide is intended to provide comprehensive advice to tenants, landlords and rental property managers regarding rights, responsibilities and best practices. It will include checklists, worksheets, and sample forms and letters, with guidance as to geographically appropriate variants. It will also provide links to other web sites and contact information.

CMHC Project Officer : *Ian Melzer*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2507 0200001
STATUS : Ongoing

RENTAL HOUSING

REPAIR NEEDS ASSESSMENT OF RENTAL HOUSING IN THE CITY OF MISSISSAUGA

The purpose of this project is to carry out a study to examine the state of repair needs of rental buildings in Mississauga.

CMHC Project Officer : *Greg Goy*
Division : Market Analysis Centre
AVAILABILITY : Product is not yet available
CIDN : 2524 0600001
STATUS : Ongoing

STRATEGIES TO PRESERVE THE EXISTING RENTAL HOUSING STOCK IN GREATER VANCOUVER

This project's objective is to identify tools and initiatives in the United States that are geared to preserving the existing rental housing stock. These could include policies, programs, legislative or other mechanisms that may be available on a national, provincial, or municipal basis. The researchers also plan to identify initiatives or strategies that provide examples of how various tools have been used. Another approach may be to identify jurisdictions where the rental housing stock is being successfully maintained

CMHC Project Officer : *Kamal C Gupta*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2525 0201018
STATUS : Ongoing
NEW

RESIDENTIAL DEVELOPMENT

COMMUNITY DESIGN: AN ANALYSIS OF DENSITY MEANINGS AND DEVELOPMENT OF A DESIGN TOOL

The study will address how Land Use Density (LUD) stipulations can impact and/or interplay with the various other system components of community plan-making, e.g. open space, schools, retail, etc. The project will provide an electronic template or guideline for a web based density visualization methodology by which individuals, groups, community associations, planning design professionals and institutions might engage in constructive dialogue in regards the selection of appropriate built forms for various densities in various planning situations.

CMHC Project Officer : *Douglas B Pollard*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 1998 0200001
STATUS : Ongoing

DEVELOPMENT LEVIES, FEES, CHARGES, AND TAXES FOR OWNERSHIP AND RENTAL HOUSING - A SURVEY AND COMPARATIVE ANALYSIS

The objective of this research is to identify, tabulate and compare the separate and cumulative costs of the various development charges, levies, fees and other charges associated with various forms and types of homeownership and rental housing. The study is to encompass a total of 30 municipalities including those examined in an earlier 1997 CMHC study. The research is to identify the changes that have occurred in the interim with regard to the development charges, levies and related fees being applied to homeownership in the intervening period and will assess the effect these charges have on new housing prices and new rental property development costs.

RESIDENTIAL DEVELOPMENT

CMHC Project Officer : *Fanis Grammenos* **CIDN** : 2752 0200001
Division : Policy and Research Division **STATUS** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

RESIDENTIAL DEVELOPMENT IN COASTAL COMMUNITIES: ADDRESSING CLIMATE CHANGE THROUGH SUSTAINABLE COASTAL PLANNING

The objectives of this project are: to understand the relationship between coastal development, climate change and sea level rise; determine the policy and planning context, and stakeholder understanding of climate change and the impact of sea level rise on coastal residential development, in a local case study; and to recommend new development guidelines for coastal residential development to adapt to climate change and sea level rise.

CMHC Project Officer : *Brian Eames* **CIDN** : 2437 0200012
Division : External Research Program **STATUS** : Ongoing
AVAILABILITY : Product is not yet available

RESIDENTIAL QUADRANTS: A NEW MODEL FOR SUSTAINABLE SUBURBS

This project's purpose is to 1. Answer the question: would developers and municipalities be interested in building the residential quadrant design concept? 2. Assess the acceptability and attractiveness of the concept and its various components to developers and municipal authorities; and 3. Perform a comparative analysis of the proposed concept, and conventional and new urbanist suburbs to assess how different street patterns affect cost, livability and consumption of land and resources.

CMHC Project Officer : *Fanis Grammenos* **CIDN** : 2525 0201002
Division : External Research Program **STATUS** : Ongoing
AVAILABILITY : Product is not yet available ***NEW***

SENIORS

ÉTUDE DE L'ORIENTATION SPATIALE DANS LES COMPLEXES RÉSIDENTIELS POUR PERSONNES ÂGÉES PRÉSENTANT OU NON DES TROUBLES COGNITIFS

Dementia, with a prevalence of 8% among Canadians aged 65 years and over, diminishes people's ability to find the places where they want to go and consequently limits them on the use of their residential environment. Older people who have dementia are likely to share residential spaces with those who do not, which form the majority. This situation turns out to be problematic with respect to architectural design. The goal of this descriptive and exploratory study is to generate design criteria to facilitate wayfinding for elderly people living in mixed residences, that is, buildings dedicated both to individuals with and without cognitive problems. Qualitative and quantitative data were obtained on the sites of three urban residences that represent variable degrees of socio-economic affluence. They were drawn from interviews with staff and with residents affected by cognitive problems, and from observing the wayfinding behaviors of selected residents. The results emphasize the devastating impacts of impaired wayfinding abilities on the residents' quality of life. The most problematic situations involved searching for one's own apartment and confusion between floors. These raise concerns over the effects of using repetitive floor layouts, and the absence of architectural landmarks and appropriate signage. To be effective, circulation systems must be clear and well organized. Practical interventions with respect to architecture, wayfinding information, and human environment are suggested, thereby initiating a reflection on the future of residential environments for older people.

Prepared by Romedi Passini ... and others. CMHC Project Officer: Luis Rodriguez. Ottawa: Canada Mortgage and Housing Corporation, 2002 printing. (External Research Program Research Report) 66 p.

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

EVALUATION OF OPTIMAL BATH GRAB BAR PLACEMENT FOR SENIORS

This project's objective is to assess different locations and configurations of bathtub grab bars and to identify the safest and most useful options to help independent seniors living in their home to maintain their independence and avoid falls.

CMHC Project Officer : *Luis Rodriguez*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available
CIDN : 2305 0200021
STATUS : Ongoing

INTERGENERATIONAL COHABITATION IN QUÉBEC CITY SUBURBS

This research project addresses intergenerational cohabitation in a suburban accessory apartment, which is defined as a self-contained housing unit attached to, or built within, a single-family house and that may share the entrance, backyard and parking area of the house (Leimwand and Despres, 1999: 3-4). The research pursues two objectives. The first involves documenting the family social dynamics that come into play when such an option is put forward. The second is to identify the bearing that municipal zoning by-laws have on the decision and the type of cohabitation.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2525 0201012
STATUS : Ongoing
NEW

LEGAL FRAMEWORK FOR SUPPORTIVE HOUSING

This project will review legislation applying to supportive housing for seniors and explore options for reform. The focus will be on legislation in British Columbia. The report resulting from the research should be useful to individuals and organizations involved in the development of supportive housing as well as policy makers.

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2525 0201017
STATUS : Ongoing
NEW

LIFE LEASE HOUSING: CONSUMER DREAM OR CONSUMER NIGHTMARE?

The objective of this research is to answer the question: what form of regulation would protect consumers while not overregulating the industry?

CMHC Project Officer : *Luis Rodriguez*
Division : External Research Program
AVAILABILITY : Product is not yet available
CIDN : 2437 0200009
STATUS : Ongoing

LIFE LEASE OWNERSHIP BY THE ELDERLY OF SUITES WITH CONTINUING CARE SERVICES

The objective of this research is to gather and document the views and preferences of prospective elderly residents for two distinct types of accommodation models. One model being a combination of life leases and support services in a home like environment, and the other a traditional long term care facility. The analysis will be done both before and after occupancy.

CMHC Project Officer : *Luis Rodriguez* **CIDN** : 2437 0200002

Division : External Research Program **STATUS** : Ongoing

AVAILABILITY : Product is not yet available

SEMINARS ON SENIORS' HOUSING TO THE RESIDENTIAL CONSTRUCTION AND HEALTH CARE SECTORS

This project's objective is to develop and undertake delivery of seminars on seniors housing to professionals in the Canadian residential and home care sectors. The project was developed to disseminate share the results of CMHC's research, programs and other relevant information concerning seniors housing. options.

Included in this project is the development of eight separate modules on different aspects of seniors housing. By year end 2002 To date, 27 31seminars/presentations will have been delivered at over 20 events. Preliminary evaluation results indicate a very high degree of satisfaction with the seminars. The seminars project and they will continue in 2002-03 with a focus on the health and home care industry, architects and home builders.

CMHC Project Officer : *Jim Zamprelli* **CIDN** : 2382 0200002

Division : Policy and Research Division **STATUS** : Ongoing

AVAILABILITY : Product is not yet available

TOGETHER INDEPENDENTLY: A HOUSING CONCEPT TO AID THE COMMUNITY INTEGRATION OF SENIORS AND DISABLED ADULTS = ENSEMBLE MAIS AUTONOMES : UN CONCEPT DE LOGEMENT QUI FAVORISE L'INTÉGRATION DES AÎNÉS ET DES ADULTES HANDICAPÉS DANS LA COLLECTIVITÉ

In Shediac, N.B., Alphonse LeGresley conceived and built a unique house that addressed a genuine Canadian housing need. Unfortunately, the Moncton area civil engineer could not persuade anyone to live in his house.

Mr. LeGresley's concept, called "Together Independently", was a duplex-style dwelling in which the occupants of each half shared certain facilities but would otherwise live as if they occupied self-contained units. They would share a kitchen with two fridges, the metered electrical system, the water and sewer systems, the heating system, and could share a central vacuum system.

The clientele for whom he designed the house were seniors and disabled adults, able to live independently with someone nearby they could call on if they took sick or needed help with chores such as housework or shopping. Basically, his house would be occupied by a primary tenant/owner and another tenant willing to act as a companion and helper to the primary occupant. They would share certain living costs, making this an economical arrangement for both.

The project proceeded in three distinct phases. Mr. LeGresley explained his concept to groups representing seniors and the disabled, got their input and adjusted his design to accommodate needs. He explained his plan to municipal officials and obtained the single dwelling designation he sought because it was key to the project's economic viability. Then he secured financing and built the house.

SENIORS

He held an open house that attracted considerable local media attention to the model. He advertised the house and promoted it directly to organizations interested in the needs of seniors and disabled persons. There was interest, but no one wanted to buy or rent the house. In late 1998, he decided to cut his losses and convert the dwelling to a true duplex. In early 1999, the make over was done and the two units were available for rent.

This report describes Mr. LeGresley's concept and suggests reasons why it did not succeed. Left unanswered is the question, "Would it work elsewhere or under different circumstances?"

Case study written by: Word-Works Communications Services. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 1999 c.2001. (Affordability and Choice Today ACT Regulatory Reform Project; ACT Case Study) 37 pages

Order number: 62228

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

SOCIAL HOUSING

EVALUATION STUDY OF THE SHELTER ENHANCEMENT PROGRAM: SEP

The objective of this project is to complete an evaluation of the Shelter Enhancement Program.

CMHC Project Officer : *Patricia Streich*
Division : Audit and Program Evaluation Services
AVAILABILITY : Product is not yet available

CIDN : 2258 0500002
STATUS : Ongoing

SUSTAINABLE DEVELOPMENT & HEALTHY HOUSING

IMPACT OF HOUSING CHOICES: CONSUMER INFORMATION ON SUSTAINABLE COMMUNITY PLANNING

The purpose of this project is to develop a consumer-oriented information product comparing the impact of various housing choice scenarios, each with different community planning patterns. Users of this web based product will be able to select among ten Canadian cities. In each city, five typical neighbourhood development patterns and locations within the urban context will be described, highlighting issues such as private vehicle use, access to daily destinations and availability of private space.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2280 0200001
STATUS : Ongoing

IT'S ALL ABOUT HOUSING: SUSTAINABLE, PLANNING PRACTICE, AND HOUSING FORM IN THE OAK RIDGES MORAINE

The objective of this project is to examine the legacy of planning policy in the Oak Ridges Moraine (ORM) region. The scope of the research centres on the impact and role of housing on growth and institutional conflict in the Moraine region. The analysis will provide a guide for potential planning actions.

CMHC Project Officer : *Steve R Jacques*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201006
STATUS : Ongoing
NEW

LANDSCAPE DESIGN AND MAINTENANCE FOR CANADIAN HOMES

The purpose is to develop an updated advisory document on landscape design, construction and maintenance for Canadian homes. CMHC's last advisory document of this nature, entitled Landscape Architectural Design and Maintenance, was published in 1982. While it offers many practical tips and tools which should be emulated, the update will be more oriented toward a consumer audience, place more emphasis on sustainability and build on recent CMHC research in this area. The document will be completed in 2003 and will be of interest to consumers, landscape architects and the landscape industry.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2229 0200001
STATUS : Ongoing

RESIDENTIAL INTENSIFICATION BEST PRACTICES FROM ACROSS CANADA

The contractor will document residential intensification best practices from across Canada. The best practices will include built projects as well as municipal initiatives that encourage residential intensification.

CMHC Project Officer : *Susan Fisher*
Division : Policy and Research Division
AVAILABILITY : Product is not yet available

CIDN : 2559 0200001
STATUS : Ongoing
NEW

SETTING PRIORITIES FOR SUSTAINABLE COMMUNITY SOLUTIONS

This project will investigate how urban decision-makers, including mayors, councillors, developers, and community residents can most appropriately set priorities for operational solutions leading toward greater community sustainability. 'Setting priorities' typically means determining which solutions will produce the largest 'bang for the buck' in financial, economic, environmental, social and cultural terms simultaneously. Priority-setting methods can be and are readily applied in relation to current decisions, future planning, and post hoc evaluation.

CMHC Project Officer : *Douglas B Pollard*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2525 0201004
STATUS : Ongoing
NEW

SUSTAINABLE COMMUNITY PLANNING AND DEVELOPMENT: DESIGN CHARRETTE PLANNING GUIDE: FINAL REPORT

Design charrettes are becoming increasingly popular as a way to bring a range of expertise and interests together to collaborate on creating innovative design solutions and embody multiple objectives and mutual interests. They give visual form to ideas and policies and can be used to test and refine planning and development policies and directions. Overall, they are a means to obtain the most creative proposals for addressing the most difficult problems in the least amount of time.

This manual is intended as a guide for those who would like to host or otherwise initiate a design charrette process for sustainable community planning. It is directed particularly at the urban planning context but has application to other planning contexts as well.

The opening chapter begins with an introduction to the concepts and elements of sustainable development and 'sustainable community', and the role of design. Design charrettes and charrette-like events are then explored in more detail in terms of their purposes, usefulness and contribution to policy development and community planning. The chapter is intended to provide foundational information regarding sustainability planning, and guidance for deciding how a design charrette can be useful in your local community.

The next chapter outlines key issues and steps involved in confirming a 'go ahead' for hosting or otherwise becoming involved with a charrette. This section examines the decision-making context, allies and resources, ways of building support and promoting the plan, and getting formal approvals. "Readiness Assessments" help you determine whether or not you are ready to proceed and what to do next in accordance with your answers.

Chapter 3, Pre-Charrette Planning: Roll up Your Sleeves, is focused on the host of tasks to be completed in advance of a charrette. It includes sections on the stakeholder community and communications: consultants and facilitators; advance meetings and options; design issues including detailed discussion on the development of the design brief; design team formation and participant selection; time and timing; venue and facilities; support materials; and additional logistics. Sample schedules, products and lists are provided.

The final chapters focus on the choreography, management and documentation of the charrette itself. Guidance and coaching hints for handling all the products of the charrette along with post-charrette communications and presentations is contained in the final chapter.

Prepared for Ian Smith, Planning Department, City of Vancouver and Douglas Pollard, Research Division, Canada Mortgage and Housing Corporation by Fiona S. Crofton, Principal, ORCAD Consulting Group Inc. Ottawa: CMHC, November 2001. 130 pages

NOTE: No. 103 in the Research Highlights Socio-economic Series summarizes the results of this research and is available on the CMHC web site.

STATUS : Completed Report and Research Highlight

AVAILABILITY : Canadian Housing Information Centre

SUSTAINABLE INTEGRATION OF INFRASTRUCTURE AND BUILDINGS: A FOLLOW-UP WORKSHOP TO THE SUSTAINABLE BUILDINGS 2000 CONFERENCE

This project's objective was to conduct and report upon a workshop entitled 'Sustainable Integration of Infrastructure and Buildings in Maastricht, The Netherlands. The project developed a report which includes the proceedings of a two day discussion and design exercise where European and Canadian experts explored the potential of green buildings to perform as community infrastructure. The report also includes a brief analysis of where Canadian design expertise in this field might find a market niche in European design markets.

Proceedings prepared by Sebastian Moffatt, The Sheltair Group. Ottawa: Canada Mortgage and Housing Corporation, 2002. 62 pages

STATUS : New Completed Report
AVAILABILITY : Canadian Housing Information Centre

TESTING CONSUMER RECEPTIVITY TO SUSTAINABLE COMMUNITY DESIGN FOR A DEMONSTRATION-BUILD SITE IN OKOTOKS, ALBERTA

This project will test consumer receptivity to the alternative features of a 144-acre demonstration project that adopts sustainable community principles and planning criteria.

CMHC Project Officer : *Susan Fisher*
Division : Research Division
AVAILABILITY : Product is not yet available

CIDN : 2363 0200001
STATUS : Ongoing

THEORY TO PRACTICE: LESSONS LEARNED FROM THE USE OF PERFORMANCE ASSESSMENT MEASURES TO IMPLEMENT SUSTAINABLE COMMUNITIES: FINAL REPORT

This report provides a review of the lessons learned from practitioners engaged in the development and use of performance assessment measures (PAMs) for sustainable community development through the development of case studies. A PAM involves the use of an indicator and target for achieving a certain desired future state of affairs with respect to promoting the features of sustainable community development. The process of developing and utilizing PAMs is fundamentally important in moving from broad sustainable community visions, goals and objectives to the implementation of specific measures that yield progress. PAMs are a tool for operationalizing sustainable development in a manner that reflects local circumstances. PAMs are used for a wide variety of purposes including public education, internal program and policy review and development, staff and political communications, and relations with the development community to name a few. The establishment of PAMs within an overall sustainable community development and reporting process can be challenging and the report points to a number of methods of establishing an effective program.

Prepared by Steven W. Peck and Ray Tomalty. CMHC Project Officer: Doug Pollard. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) ca. 80 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

WOMEN AND HOUSING

HOUSING OPTIONS FOR WOMEN LIVING ALONE IN RURAL AREAS: FINAL REPORT

Over the years, there has been an increased awareness that female-led households have different housing needs than those of the traditional nuclear family. However, most studies have concentrated on urban areas and there is very little literature available on the housing requirements of women living rurally. This project's objectives are: to identify the unique housing requirements of women living alone in rural areas, the housing options that would meet these requirements, changes required to planning practices and land use regulations that would allow the housing sector to respond to the unique housing requirements of women living alone while respecting the density issues, environmental issues and other factors essential for the preservation of the rural character of life.

Drawing on a case study of fifty women living in the Boundary District of British Columbia, the report suggests that the existing housing supply does not meet the needs of women living alone. The main issues identified are: affordablility problems due to low incomes; a limited numbers of housing choices (basically single dwellings on large acreages); and issues around home and property maintenance.

The majority of women wanted to see more housing options in rural areas than the typical single dwelling on a large acreage. While most women preferred to live in their own private dwelling, they were interested in sharing land or adding a second dwelling on their property to provide additional income or for physical help with farm or rural chores. Zoning by-laws in most rural areas in the Boundary prohibit these housing options as housing density is limited to one dwelling per lot, even in areas where the minimum lot size is twenty-five acres. If women living alone are going to have their housing needs fully met in rural areas, land use regulations must allow a greater range of options to emerge.

Prepared by Margaret Steele. Ottawa: Canada Mortgage and Housing Corporation, 2002. (External Research Program Research Report) 55 pages

STATUS : New Completed Report

AVAILABILITY : Canadian Housing Information Centre

YOUTH AND HOUSING

HOW TALOYOAK, NUNAVUT TERRITORY CREATED AFFORDABLE HOUSING FOR YOUTH THROUGH FUNDING PARTNERSHIPS AND THE LESSONS LEARNED = COMMENT TALOYOAK, DANS LE TERRITOIRE DU NUNAVUT, A PRODUIT DES LOGEMENTS ABORDABLES POUR LES JEUNES GRÂCE À DES PARTENARIATS DE FINANCEMENT, ET LES LEÇONS QUE LA COLLECTIVITÉ A TIRÉES DE SON EXPÉRIENCE

Unlike most parts of Canada, where housing an aging population is a pressing public issue, the civic administration of the Spence Bay Hamlet of Taloyoak, Nunavut Territory, is concerned with the housing needs of youth. In 1996, 42 per cent of the population was aged 14 and under, compared to 13 per cent aged 45 and over. A lack of suitable housing for young adults forces many working youth to live with their parents or grandparents in overcrowded conditions.

To meet the housing needs of youth, the municipality built a 12-unit housing project on land its development corporation leased from the municipality. The project can serve as a model which other northern communities facing similar problems could emulate. The $7,000 awarded to the Hamlet under the A.C.T. program helped document and promote the project for the benefit of other northern communities. This A.C.T. report is particularly instructive in its description of the funding sources Taloyoak tapped to pay for it all and the various difficulties encountered along the way.

Case study written by Louis Primeau, Hamlet of Taloyoak, Nunavut Territory. Edited by Word-Works Communications Services. Prepared for: Federation of Canadian Municipalities; Canadian Home Builders' Association; Canadian Housing and Renewal Association; Canada Mortgage and Housing Corporation. Ottawa: FCM; CHBA; CHRA; CMHC, 2001. (Affordability and Choice Today ACT Case Study) 28 pages

Order number: 62328

STATUS : Completed Report
AVAILABILITY : CMHC Information Products

LOGEMENT INNOVATEUR POUR JEUNES PERSONNES SANS ABRI : RAPPORT FINAL

This research is aimed at identifying innovative housing projects intended to meet the needs of homeless youth and the factors that make them exemplary projects, based on two main sources of information – a review of the literature and interviews with key people working in this sector.

The needs of homeless youth documented in the literature are extensive and complex. There are often major deficiencies in terms of training and preparation for the job market; emotional and relationship problems frequently result from a difficult life; and surviving as a homeless person may have led to health and substance abuse problems. In addition, it would seem that these youth often have mental health problems.

Recent studies highlight the determining role of housing as a solution to the problems of homelessness. However, while a stable home may be very important, it is clear that, for certain subgroups including youth, support services are necessary. An analysis of effective models for youth reveals the following elements: a safe and affordable home, constant emotional support, a relationship with at least one responsible and trustworthy adult, the opportunity to develop life skills leading to autonomy, and access to services such as training, education, an employment readiness course, and health care including mental health. The studies also show the need for social ties. Participation and control issues were often raised. Examples of projects that encourage participation in project design were collected.

Prepared by Luba Serge. Ottawa: Canada Mortgage and Housing Corporation, 2002. (CMHC External Research Program Report) 57 pages

STATUS : Completed Report
AVAILABILITY : Canadian Housing Information Centre

RESIDENTIAL INTEGRATION OF YOUNG MIGRANTS IN QUEBEC

This study concerns the residential integration process of young migrants in Quebec. Residential integration is defined as a process that begins even before young people leave their parents' home and that continues until they are relatively stable in a dwelling; this stability often, but not necessarily, corresponds to the formation of a family unit.

CMHC Project Officer : *Leanne Elliott*
Division : External Research Program
AVAILABILITY : Product is not yet available

CIDN : 2305 0200005
STATUS : Ongoing

Adjustable Rate Mortgages / Prêts hypothécaires à taux flottant

(Rev. 18p., October/octobre 1991)

Children in the urban environment / Les enfants dans le milieu urbain

(23 p., January/janvier 1993)

CMHC Scholarship Program: A Bibliography 1947 - 1993 / Le Programme de bourses d'études de la SCHL : une bibliographie 1947 - 1993

(66 p., 1994)

Cohousing /Habitation communautaire

(8p., July/juillet 1996)

Congregate housing / Habitat collectif

(10 p., November/novembre 1991)

Construction industry in Canada / Industrie de la construction au Canada

(Rev. 27 p., January/janvier 1988)

Cooperative housing / Coopératives de logements

(Rev. 40 p., September/septembre 1988)

Crime prevention and architectural design / Design architectural et prévention de la criminalité

(7 p., May/mai 1989)

Crime prevention and urban safety in residential environments / La prévention du crime et la sécurité dans les milieux résidentiels urbains

(12p., September/septembre 1989)

Discrimination and segregation in housing in Canada / Bibliographie sur la discrimination et la ségrégation dans le logement au Canada

(5p., March/mars 1993)

Downtown redevelopment / Réaménagement de centres-villes

(Rev. 26p., January/janvier 1989)

Earthquakes and construction / Tremblements de terre et construction

(20 p., March/mars 1995)

External Research Program Reports arranged by subject / Rapports du programme de recherche à l'extérieur par sujet

(Rev. 70 p., November/novembre 2001)

Floating Homes and Houseboats / Maisons-bateaux et Bateaux-maisons

(15 p., August/août 1997)

Foundations / Fondations

(17p., January/janvier 1989)

Graduated payment mortgages / Prêts hypothécaires à paiements progressifs

(Rev.3p., October/octobre 1991)

Home equity conversion / Conversion de la valeur nette du logement

(9p., October/octobre 1988)

Home ownership / La propriété d'un logement

(Rev. 28p., August/août 1987)

Homelessness / Sans-logis

(Rev. 61p., June/juin 1998)

Housing and AIDS / Hébergement des personnes atteintes du SIDA

(5 p., September/septembre 1993)

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Housing conversion and residential intensification / Conversion d'habitations et intensification résidentielle
(Rev. 8 p., October/octobre 1990)

Housing demand / La demande en logement
(22 p., November/novembre 1986)

Housing for immigrants and minorities / Logement pour les groupes ethniques et immigrants
(7 p., May/mai 1993)

Housing for single people / Le logement et les personnes seules
(7 p., October/octobre 1992)

Housing in Canadian municipalities / Logement dans les municipalités canadiennes
(Rev. 44 p., March/mars 1985)

Housing in urban core areas / Logement dans les centres-villes
(Rev. 13 p., January/janvier 1985)

Housing management / Gestion des logements
(Rev. 23 p., January/janvier 1989)

Housing markets / Le marché du logement
(Rev. 36 p., January/janvier 1988)

Housing policy in Canada / Politique du logement au Canada
(Rev. 45 p., January/janvier 1987)

Housing quality / Qualité de logement
(8 p., January/janvier 1988)

Housing renovation / Restauration de quartiers résidentiels
(Rev. 62 p., March/mars 1988)

Housing subsidies / Subventions au logement
(Rev. 49 p., October/octobre 1990)

Impact of inflation on house prices / Effets de l'inflation sur le prix des maisons
(Rev. 5 p., February/février 1995)

Indoor air pollution / Pollution de l'air des habitations
(Rev. 29 p., July/juillet 1990)

Infill housing / Logement résidentiel complémentaire
(Rev. 8 p., March/mars 1990)

Insulation / Isolement
(Rev. 33 p., November/novembre 1991)

Land banks and land trusts / Banques agraires et sociétés foncières
(15 p., November/novembre 1990)

Life cycle costing / Estimations du coût global
(Rev. 9 p., November/novembre 1992)

Lofts / Lofts
(6 p., July/juillet 1996)

Log structures / Constructions en pièce sur pièce
(Rev. 8 p., April/avril 1989)

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Manufactured housing / Habitation préfabriquée
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Mortgage-backed securities / Titres hypothécaires
(13 p., March/mars 1988)
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(Rev. 21 p., August/août 1984)
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(Rev. 51 p., October/octobre 2002)
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(Rev. 19 p., October/octobre 1989)
*The North / Le nord
(31 p., November/novembre 2002)
Playgrounds / Terrains de jeux
(Rev. 30 p., December/décembre 1991)
Post occupancy evaluation / Évaluation après occupation
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Public housing in Canada / Habitations à loyer modéré au Canada
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Public housing in Great Britain / Habitations à loyer modéré au Grande-Bretagne
(17p., September/septembre 1988)
Public/Private Partnerships / Association du secteur public et du secteur privé
(13 p., December/décembre 1989)
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